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INSTITUTE FOR DEFENSE ANALYSES TACTICAL WARFARE (TACWAR) MODEL.--ETC(U)
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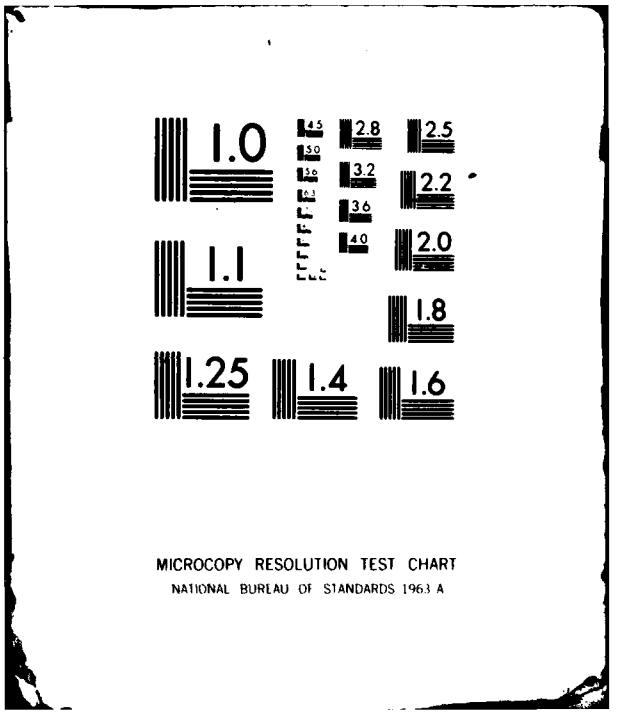
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COMMAND AND CONTROL TECHNICAL CENTER

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Computer System Manual CSM-MM-237-77 — PT-2

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INSTITUTE FOR DEFENSE ANALYSES
TACTICAL WARFARE (TACWAR) MODEL.

Program Maintenance Manual.

Part II.

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ABSTRACT

The Institute for Defense Analyses (IDA) Tactical Warfare (TACWAR) model is a fully-automated combat simulation that can be used to assess the interaction of combat forces employing conventional, nuclear, and chemical weapons in a theater-wide campaign. This document presents the information necessary for programmer personnel to maintain the TACWAR model.

GLOSSARY

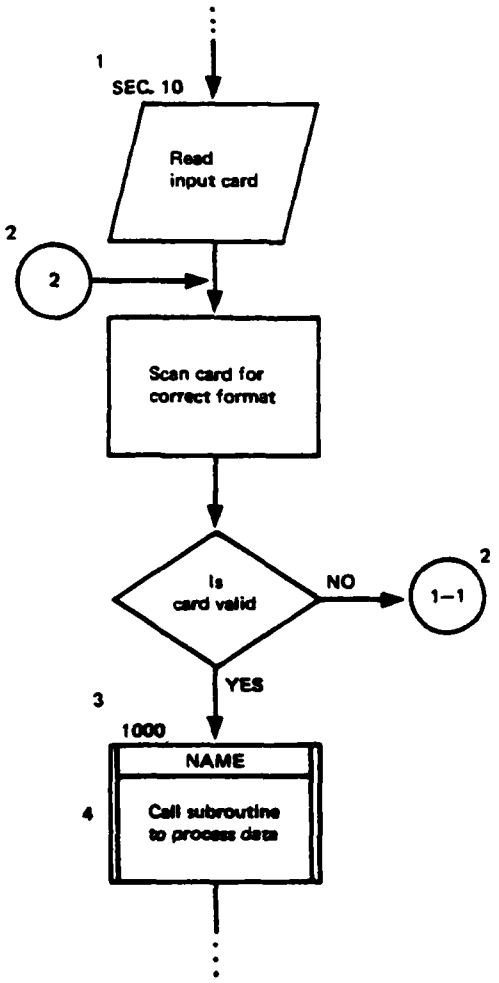
Abbreviation	Meaning
AAA	antiaircraft artillery
ABA	airbase attacker
ABAE	airbase attacker escort
ABAS	airbase attacker diverted to SAM-suppression
CAS	close air support
CASA	close-air-support attacker
CASD	close-air-support defender
CASE	close-air-support escort
CASS	close-air-support diverted to SAM-suppression
CEP	circular error probable
COMMZ	communication zone
FEBA	forward edge of battle area
INT	interdiction of division in reserve
QRA	quick reaction alert
SAM	surface-to-air missile
SSM	surface-to-surface missile
TOE	table of organization and equipment

APPENDIX A

FLOWCHARTS OF TACWAR ROUTINES (EXCLUDING BLOCK DATA ROUTINES)

APPENDIX A

The flowcharting symbols used in this manual conform to the standards set down in the NMCSSC Publications Style Manual. In addition to these standards, some new conventions have been adopted which are illustrated by the following flowchart segment:



1. A section number appearing above a flowchart symbol corresponds to the section number marking the beginning of a major section of code in a subroutine. Section numbers may be indicated as SEC. 10 or S10.

2. Connector symbols represent either an exit to or an entry from another part of the flowchart. The in connector (labeled 2) indicates where the logic flow is coming from and is always identified by a unique number within the flowchart. The out connector (labeled 1-1) indicates where the logic flow is going and is identified by a hyphenated number. The number to the left of the hyphen represents the number of the page (part) of the subroutine flowchart. The number to the right of the hyphen is the number associated with the in connector to which the logic branches. One page flowcharts use only a single number in the out connector, since the page number must be 1.

3. A statement number appearing above a flowchart symbol corresponds to the statement number of a line of code.

4. The predefined process symbol has been modified by striping to include the name of the subroutine (or function) being called.

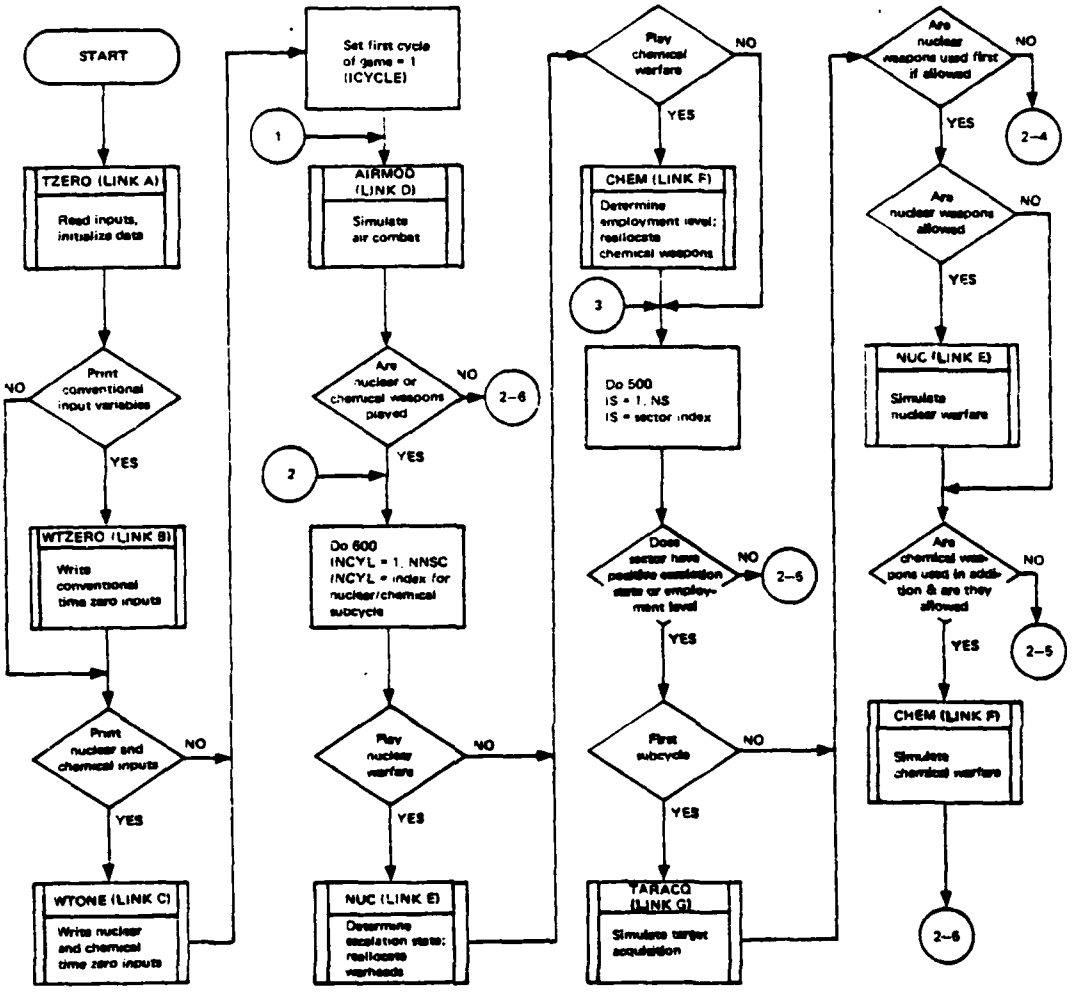


Figure 19. Flowchart of TACWAR Routine TMAIN (Part 1 of 2)

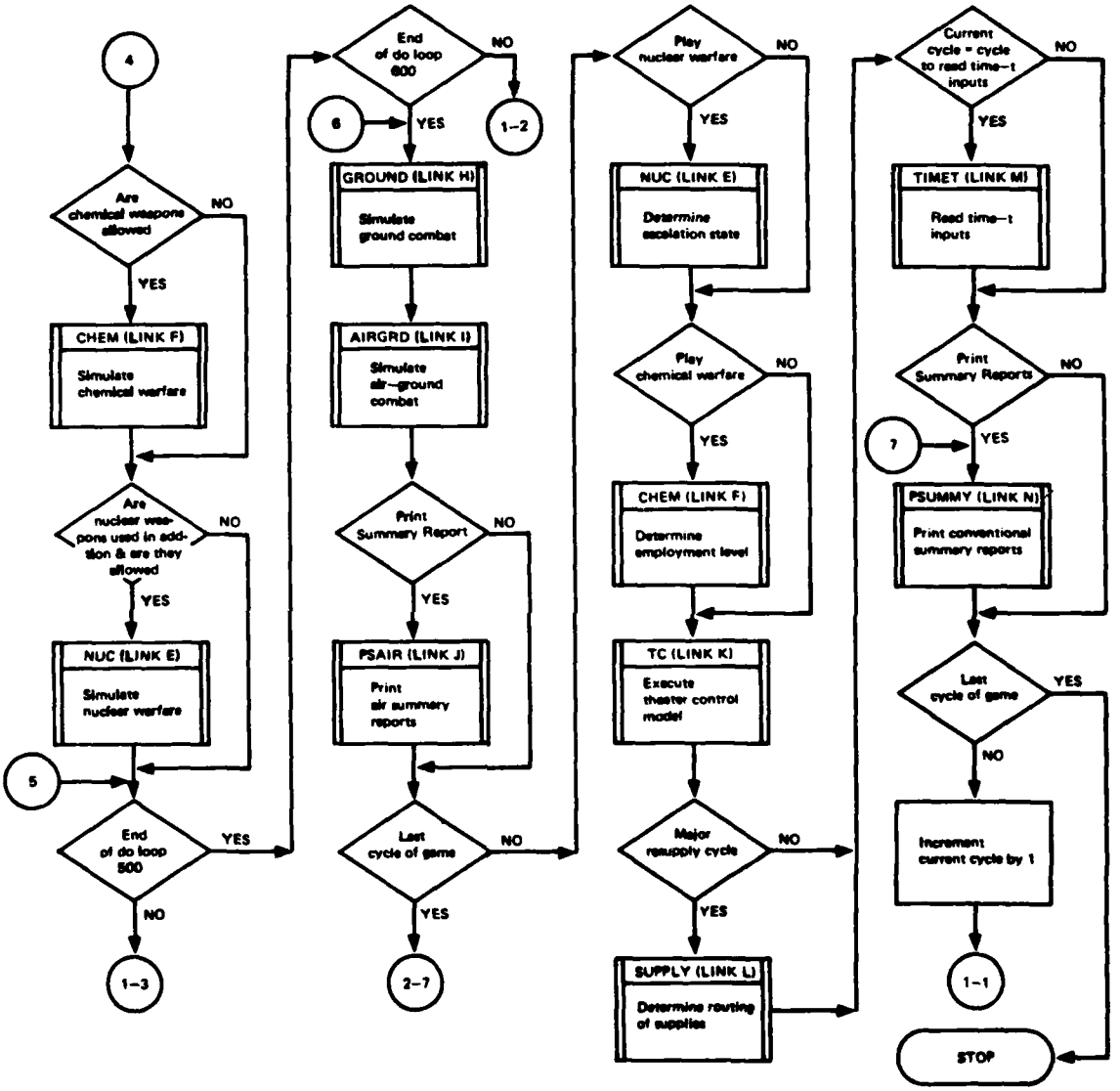


Figure 19. Flowchart of TACWAR Routine TMAIN
(Part 2 of 2)

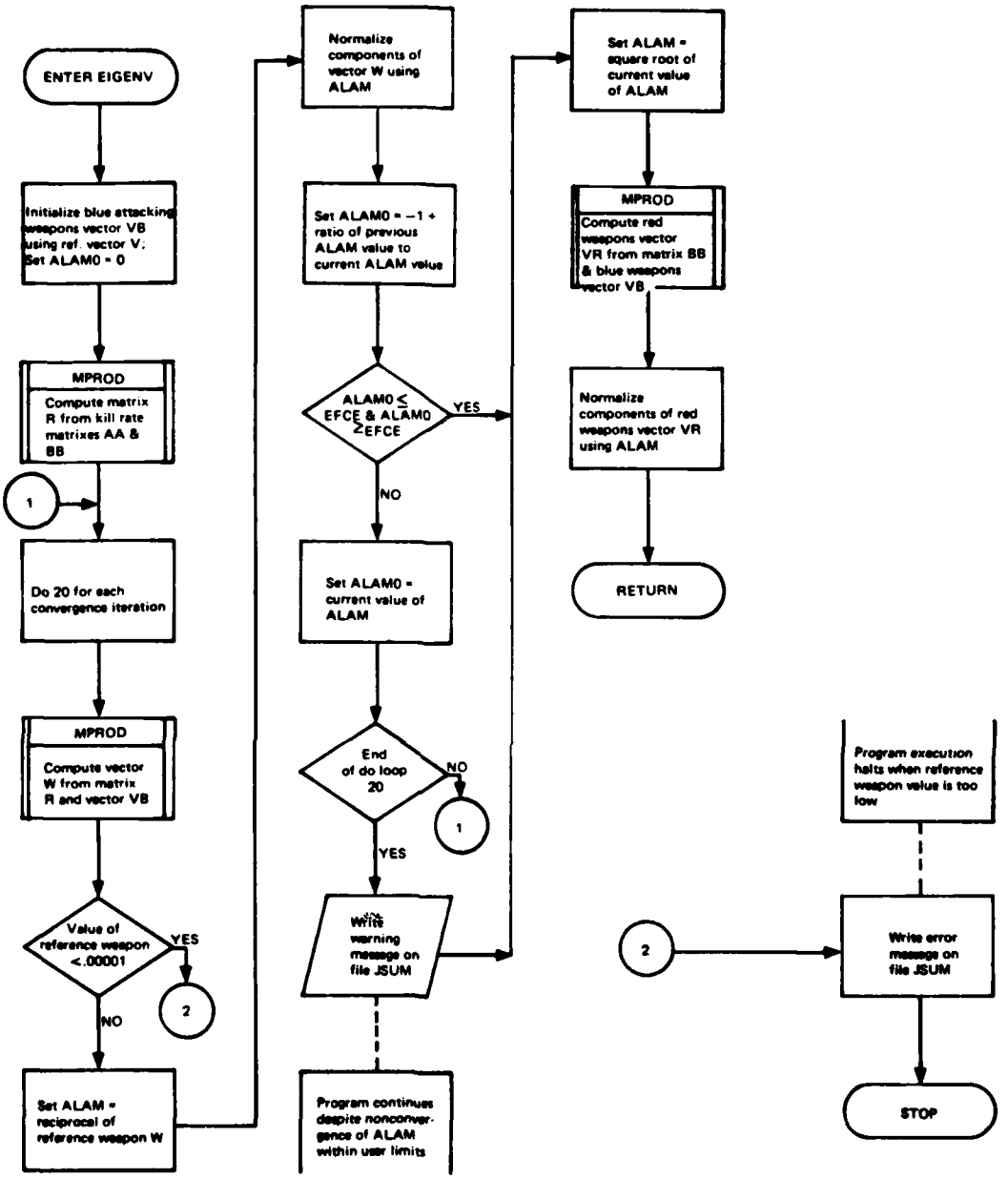


Figure 20. Flowchart of TACWAR Routine EIGENV

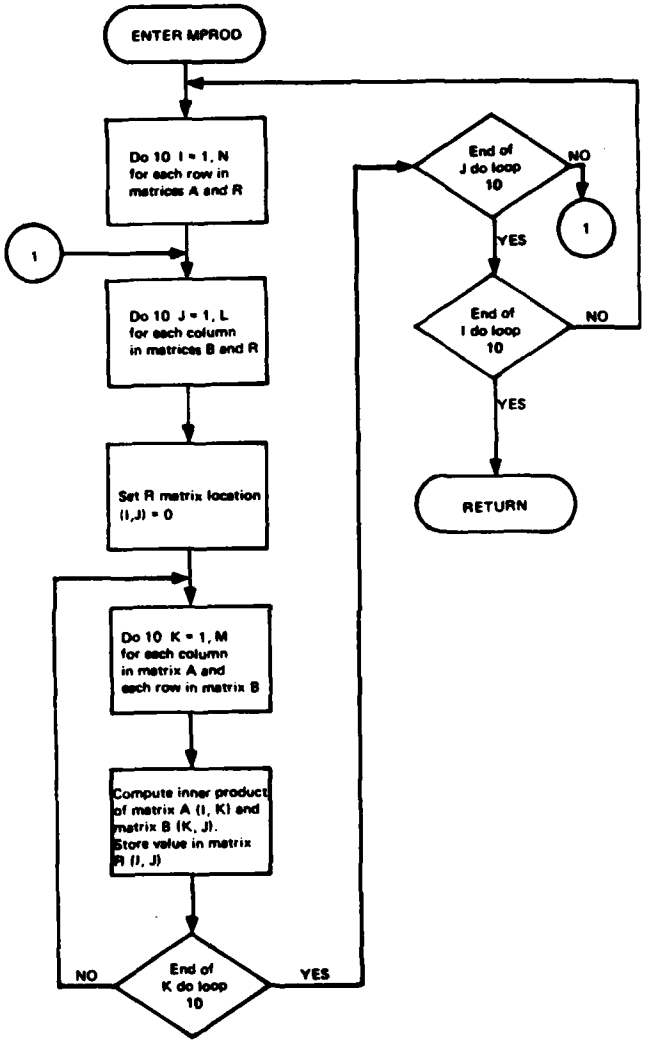


Figure 21. Flowchart of TACWAR Routine MPROD

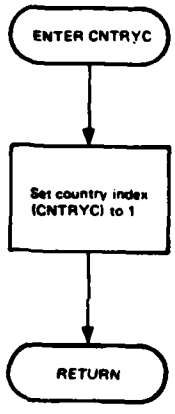


Figure 22. Flowchart of TACWAR Routine CNTRYC

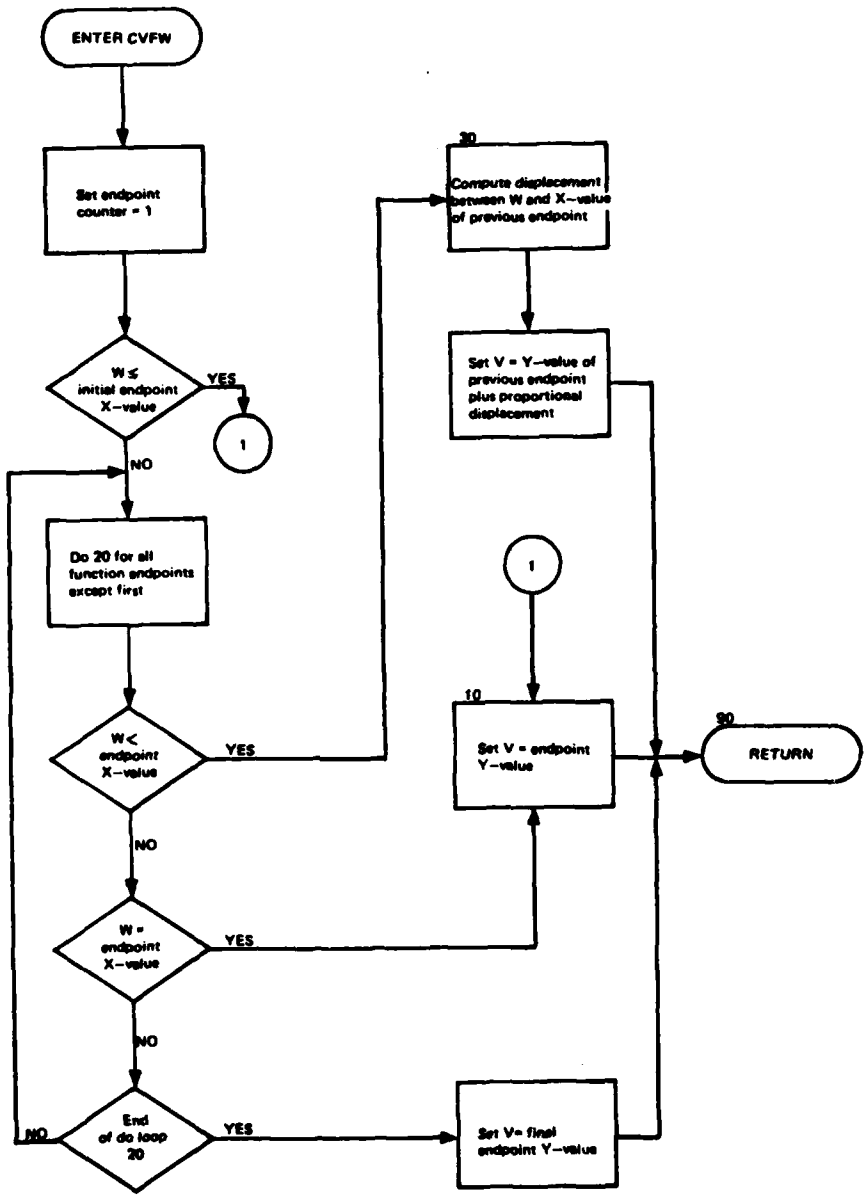


Figure 23. Flowchart of TACWAR Routine CVFW

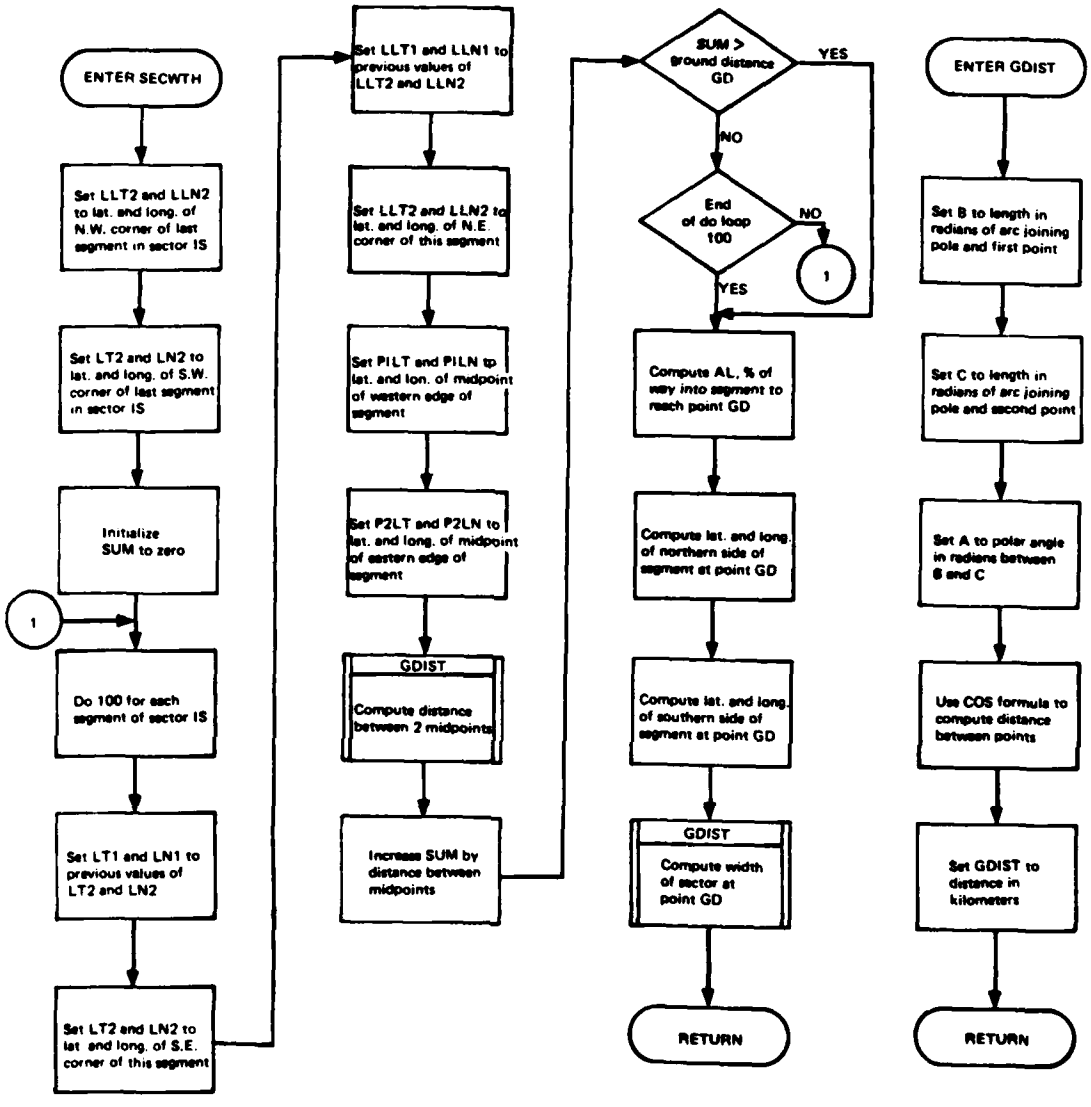


Figure 24. Flowcharts of TACWAR Routines SECWTH and GDIST

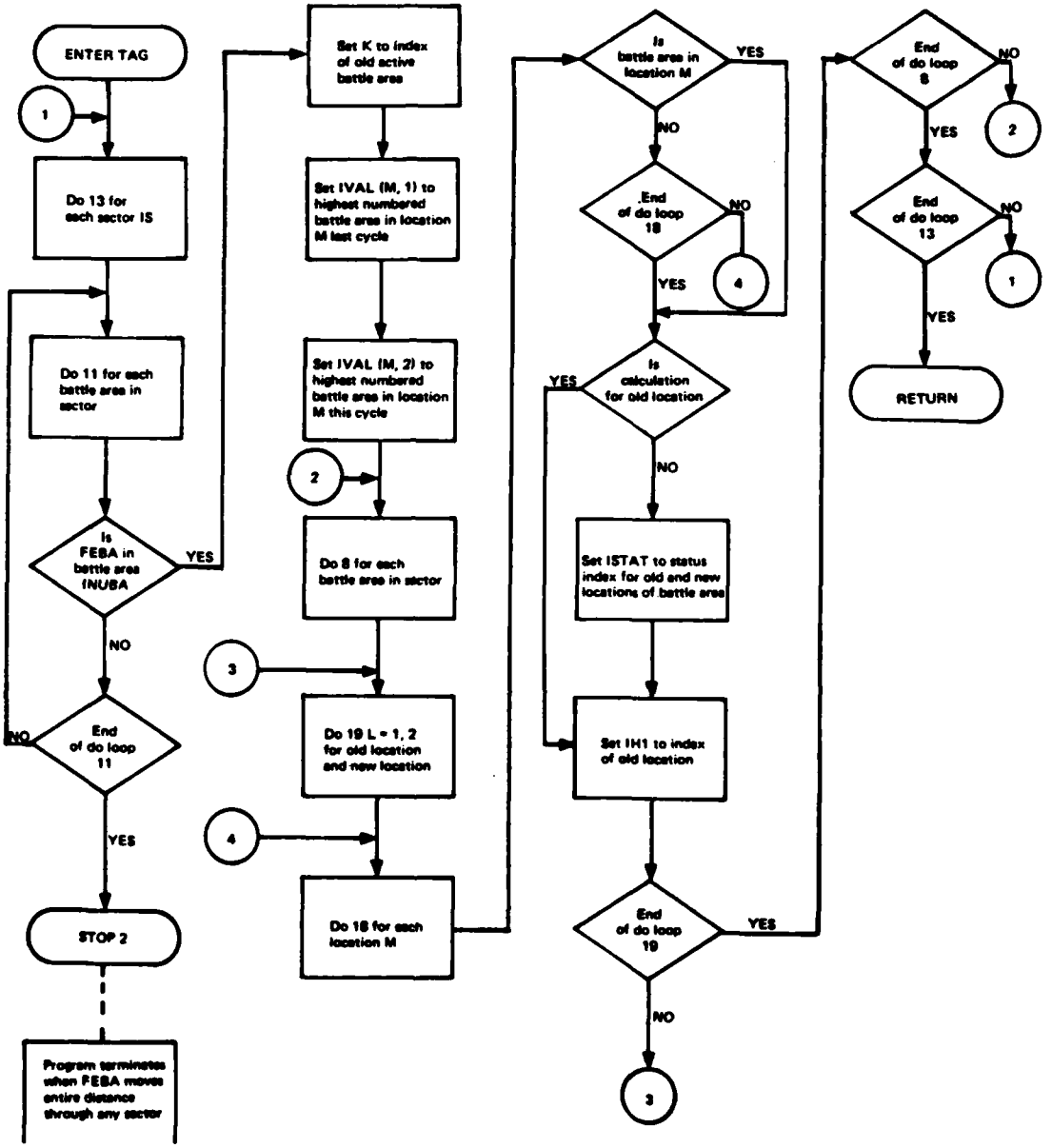


Figure 25. Flowchart of TACWAR Routine TAG

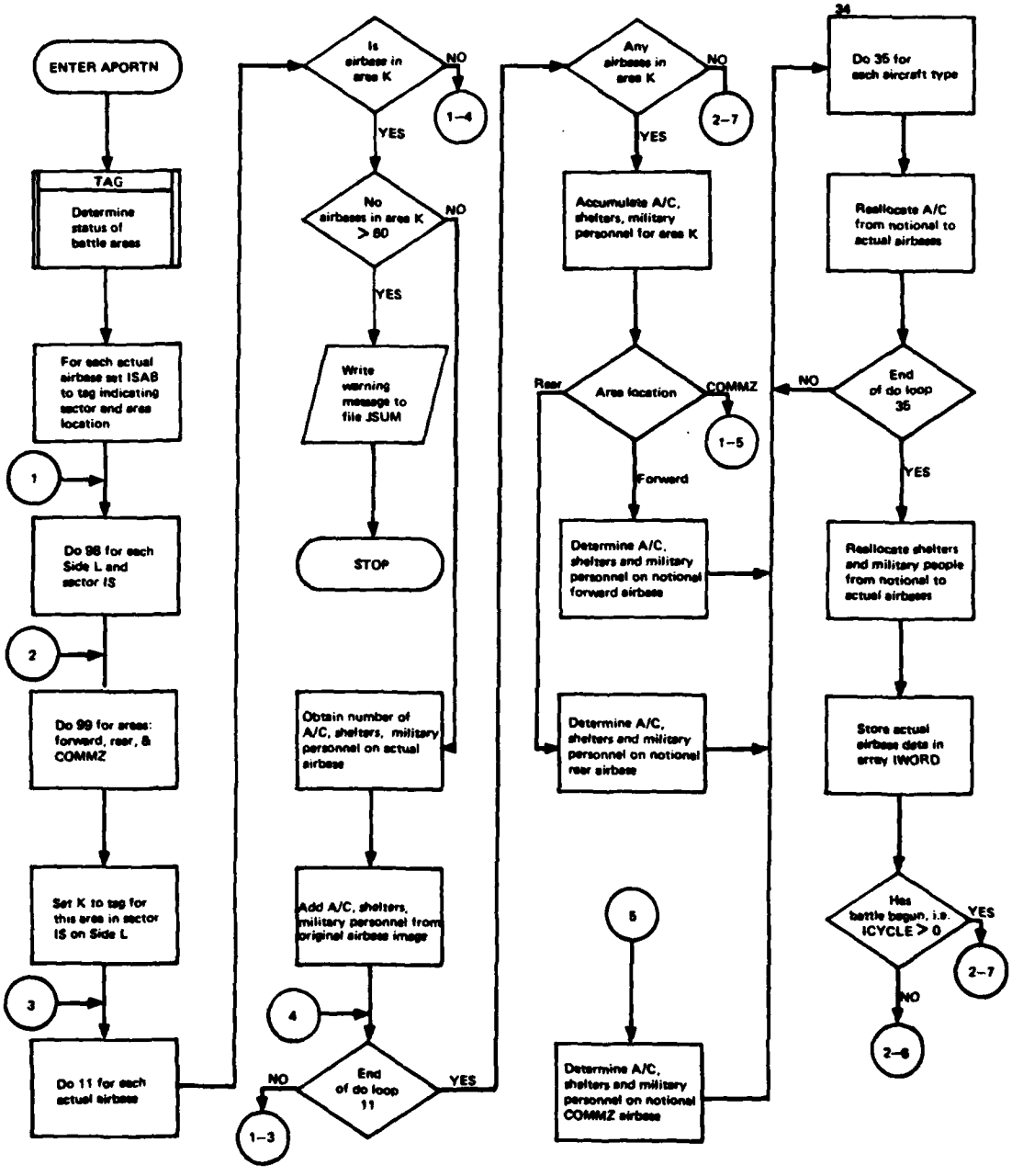


Figure 26. Flowchart of TACWAR Routine APORTIN (Part 1 of 2)

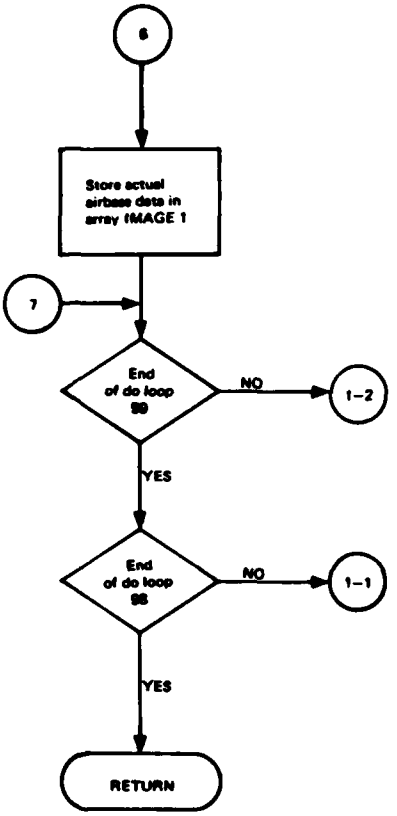


Figure 26. Flowchart of TACWAR Routine APORTN (Part 2 of 2)

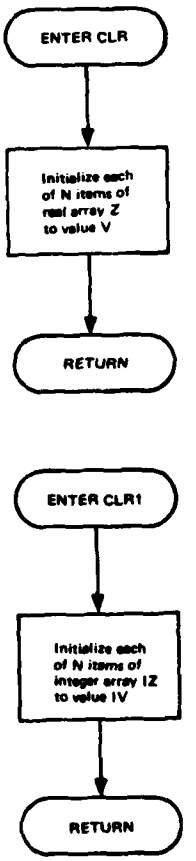


Figure 27. Flowchart of TACWAR Routine CLR

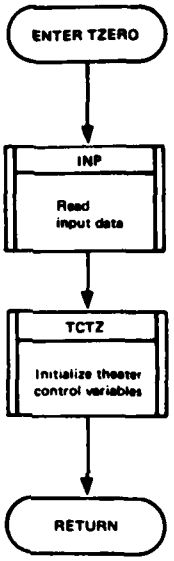


Figure 28. Flowchart of TACWAR Routine TZERO

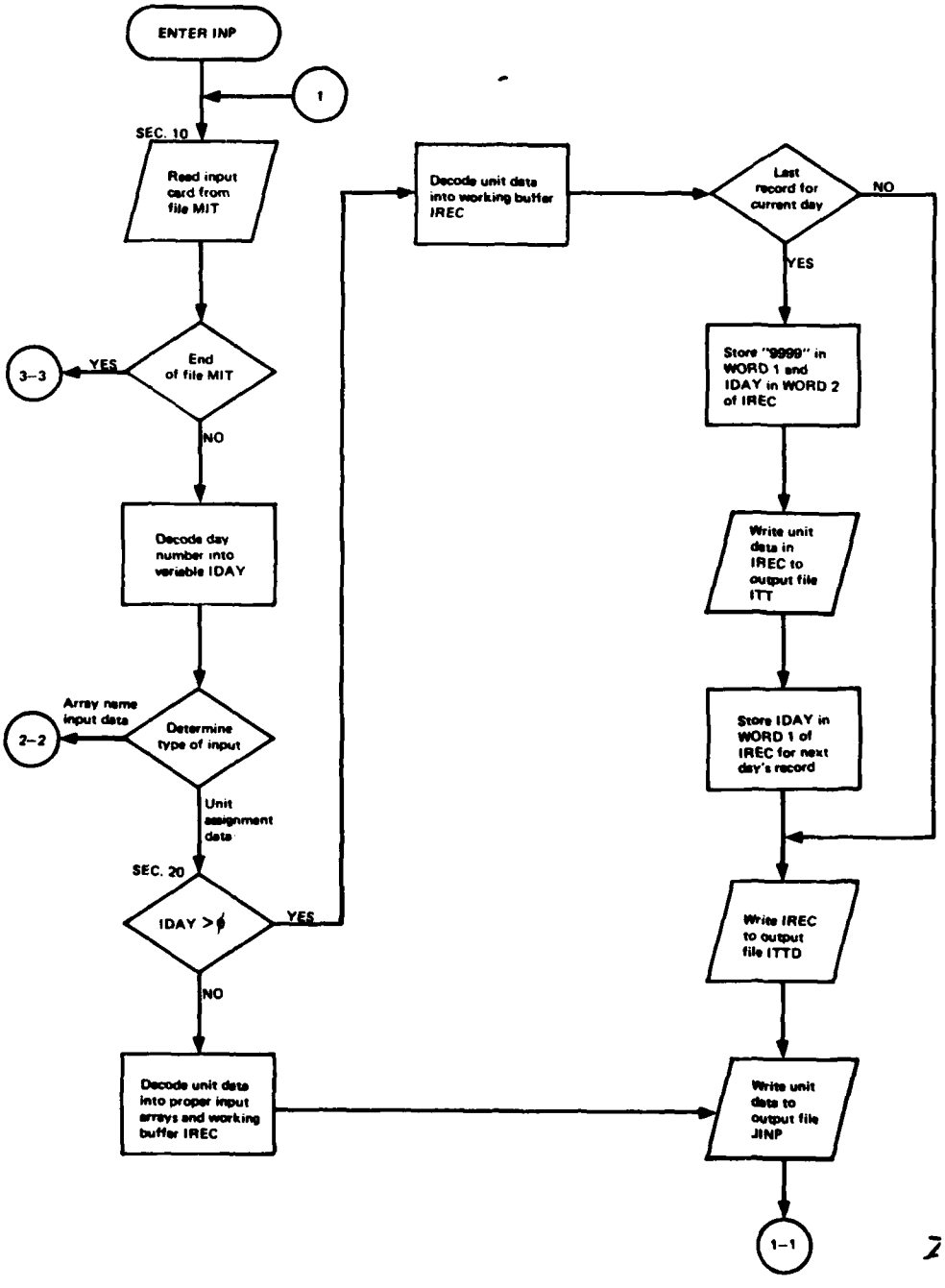


Figure 29. Flowchart of TACWAR Routine INP (Part 1 of 3)

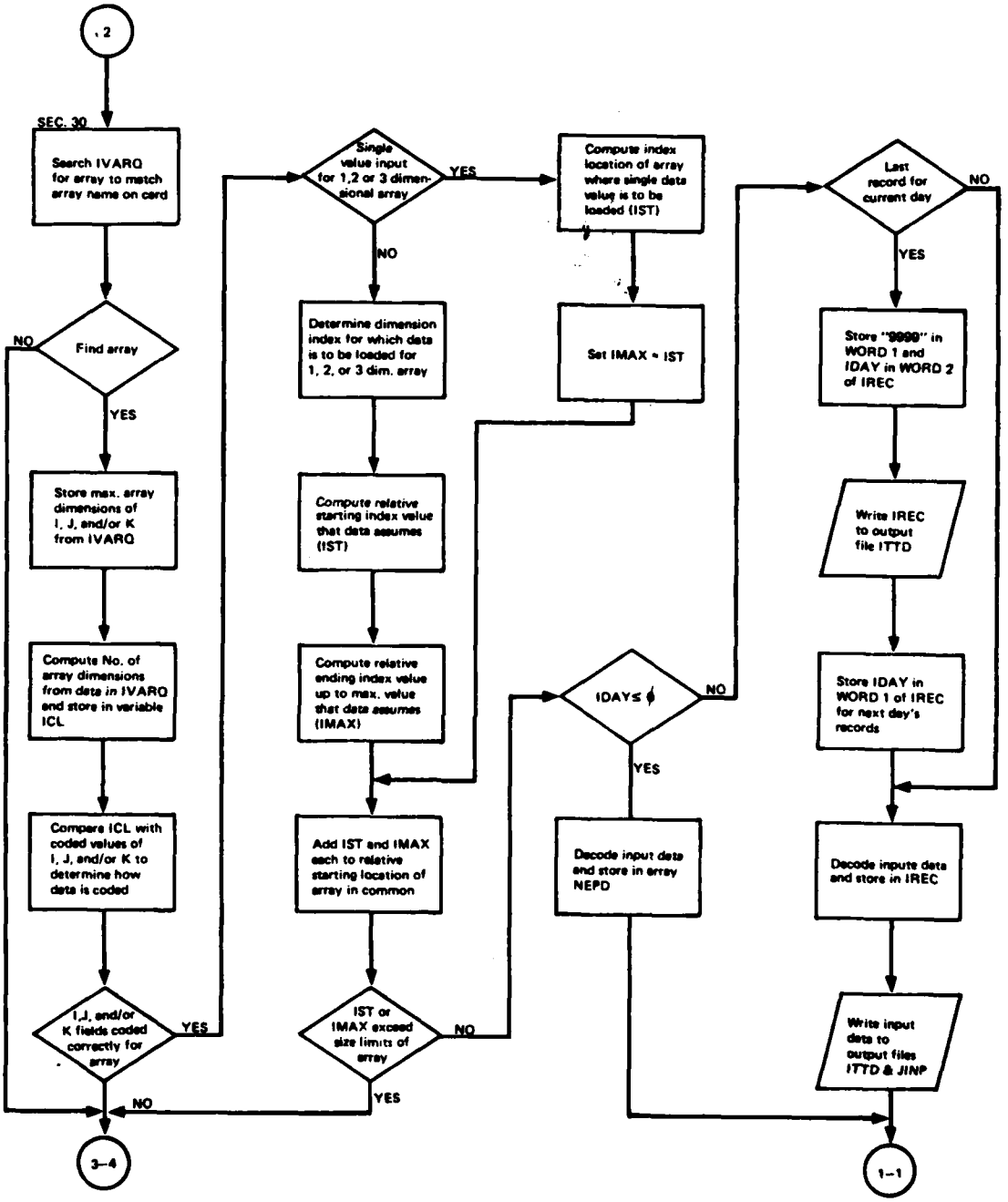


Figure 29. Flowchart of TACWAR Routine INP (Part 2 of 3)

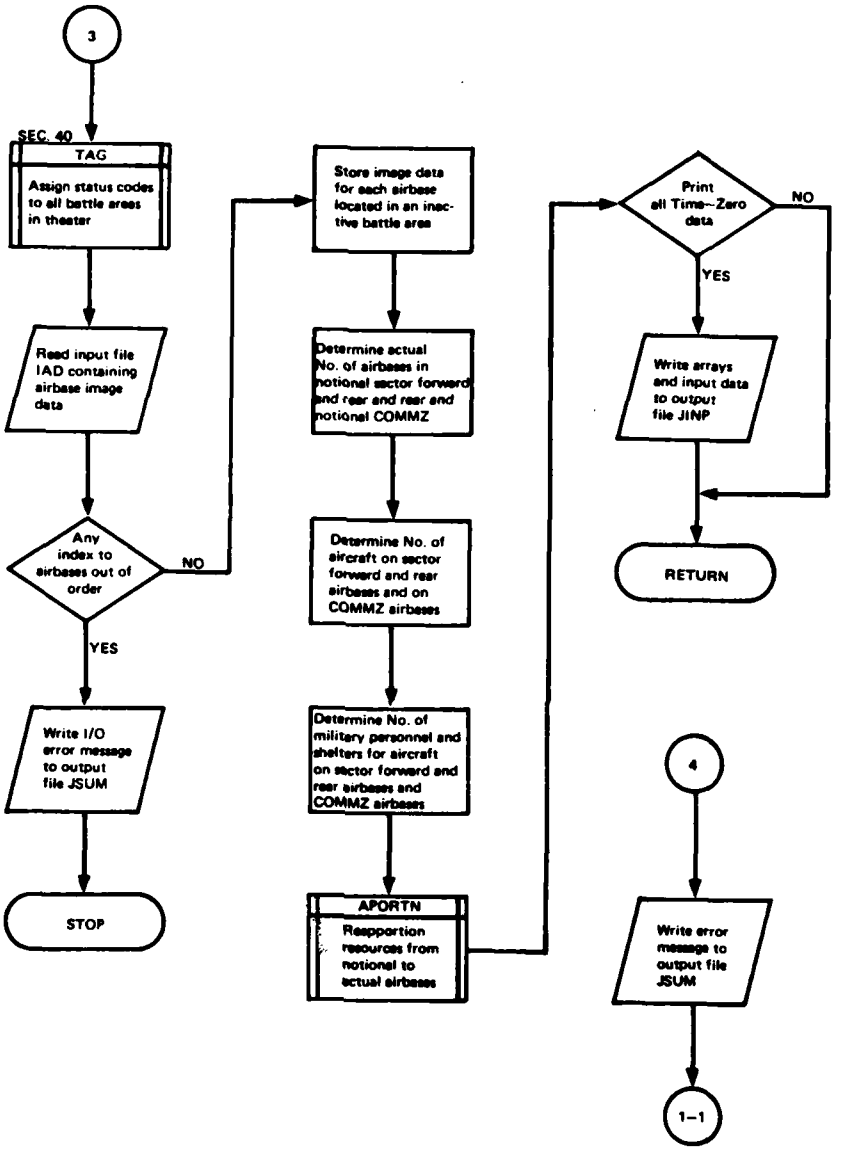


Figure 29. Flowchart of TACWAR Routine INP (Part 3 of 3)

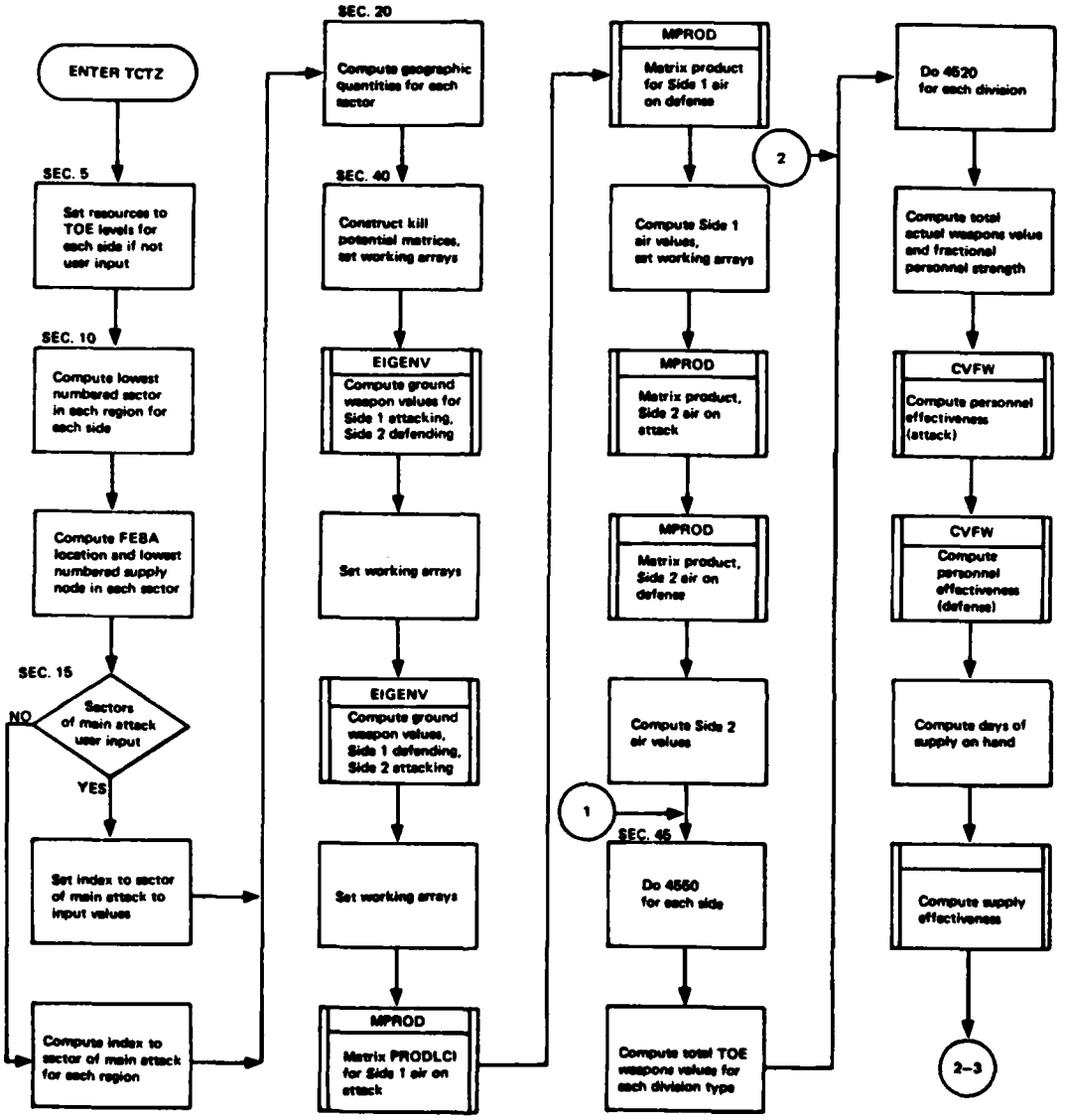


Figure 30. Flowchart of TACWAR Routine TCTZ (Part 1 of 2)

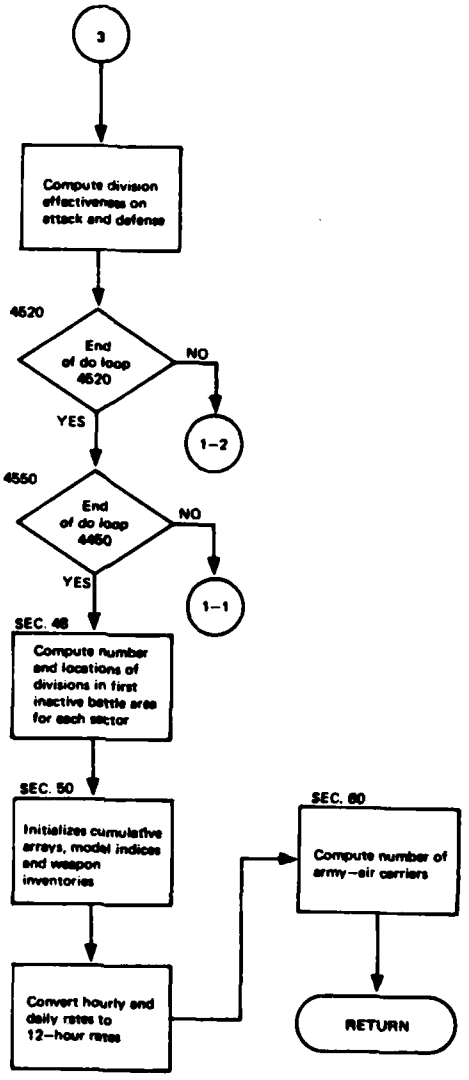


Figure 30. Flowchart of TACWAR Routine TCTZ (Part 2 of 2)

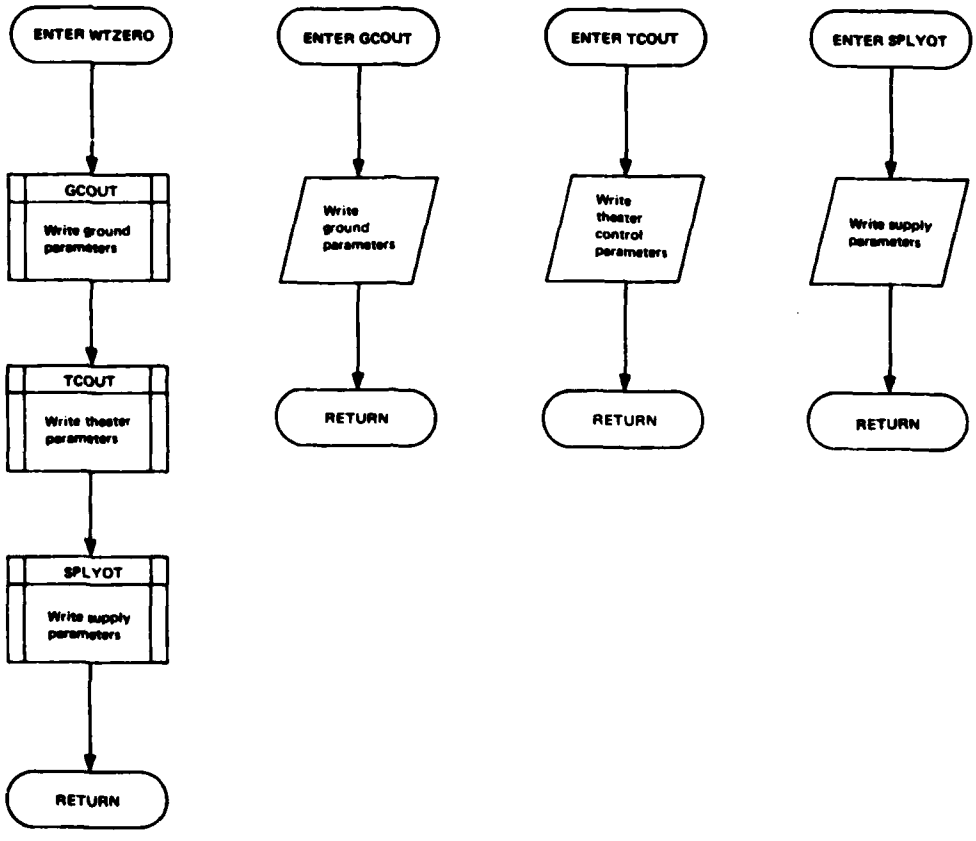


Figure 31. Flowcharts of TACWAR Routines WTZERO, GCOUT, TCOUT, and SPLYOT

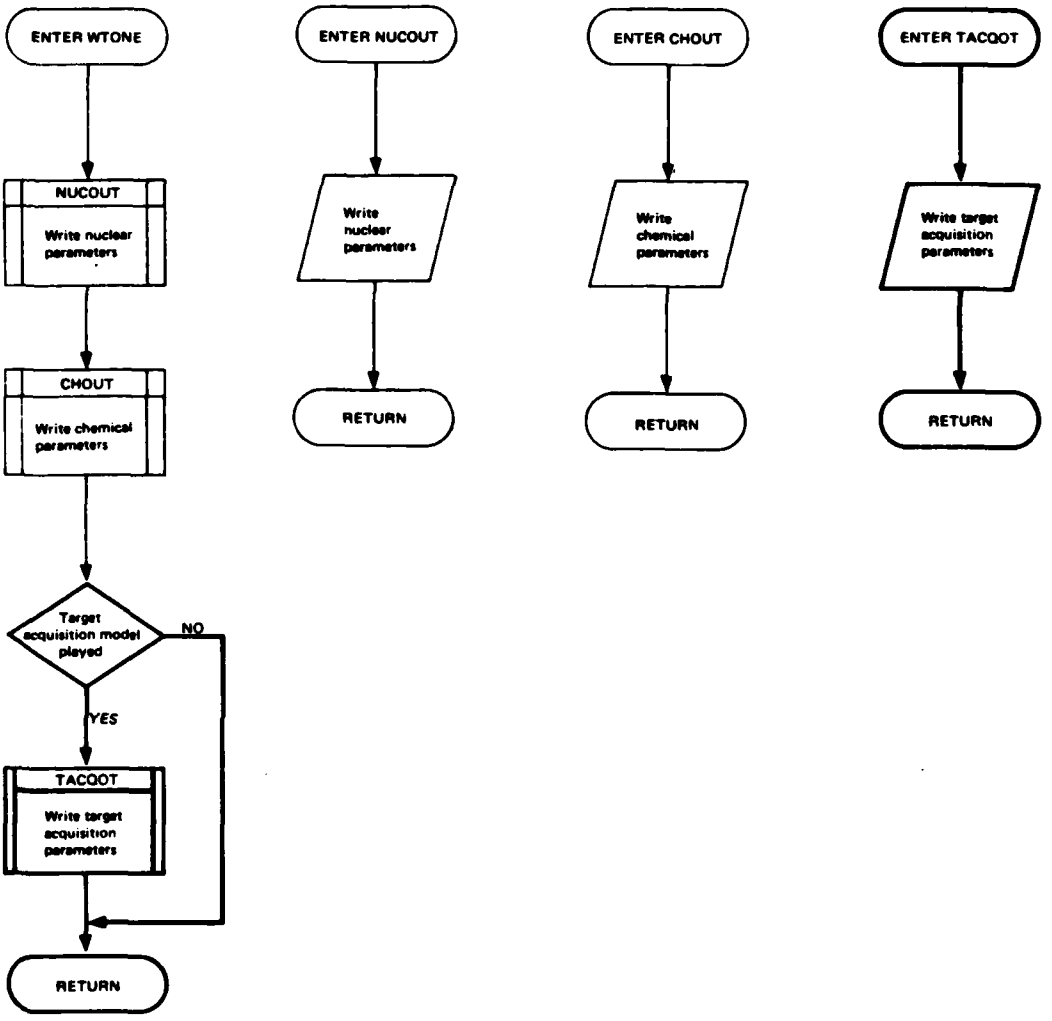


Figure 32. Flowcharts of TACWAR Routines WTONE, NUCOUT, CHOUT, and TACQOT

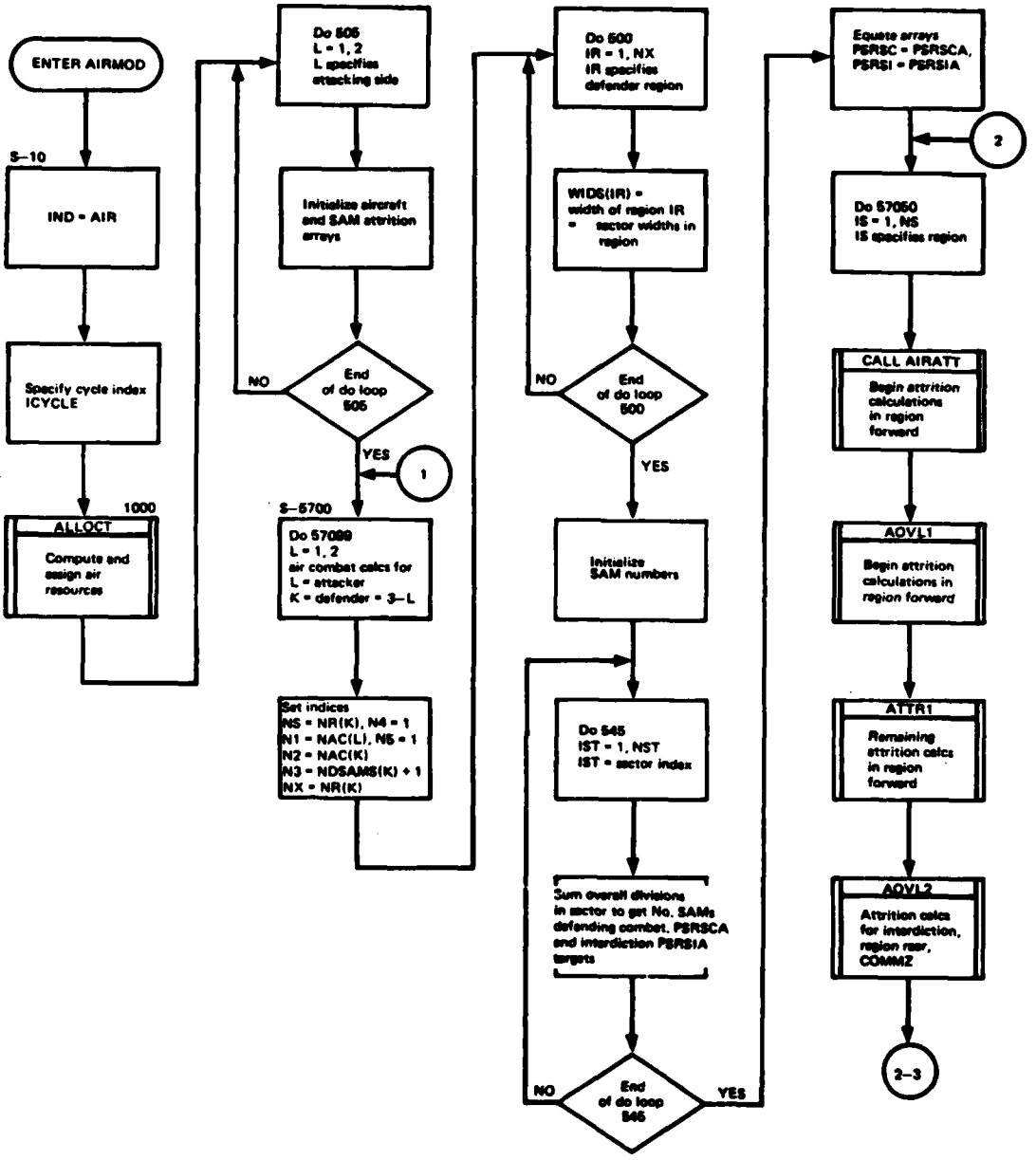


Figure 33. Flowchart of TACWAR Routine AIRMOD (Part 1 of 2)

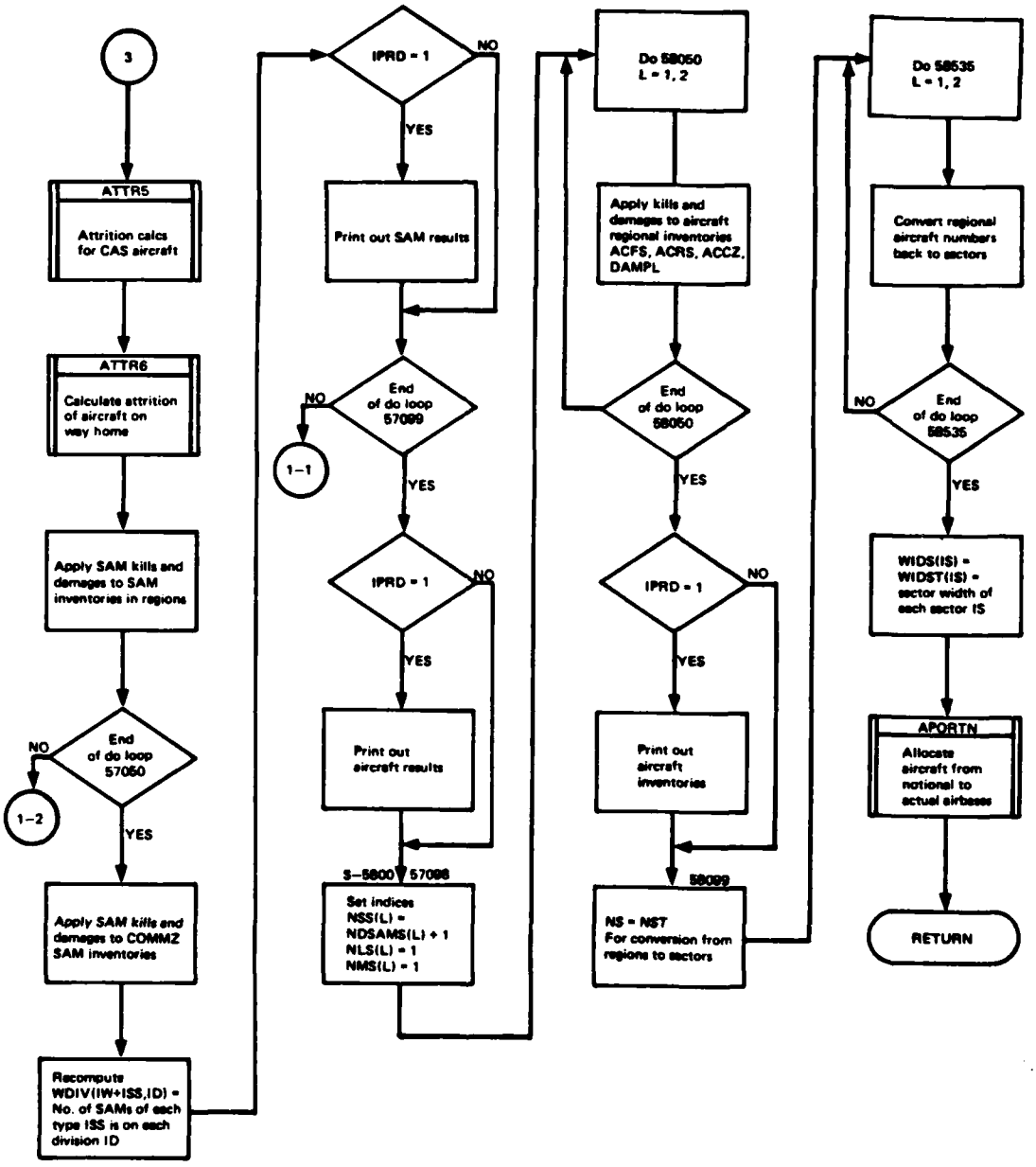


Figure 33. Flowchart of TACWAR Routine AIRMOD (Part 2 of 2)

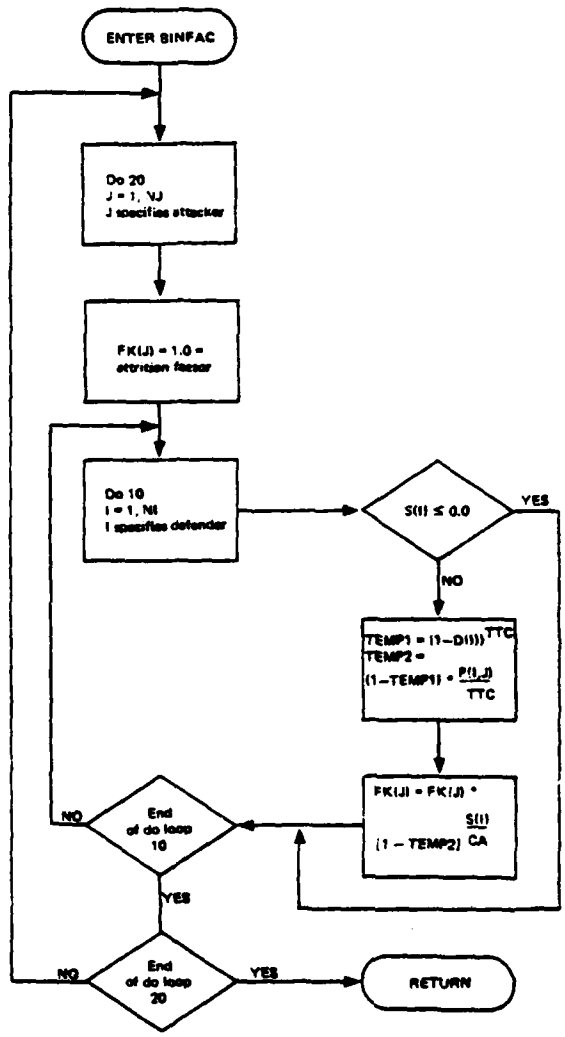


Figure 34. Flowchart of TACWAR Routine BINFAC

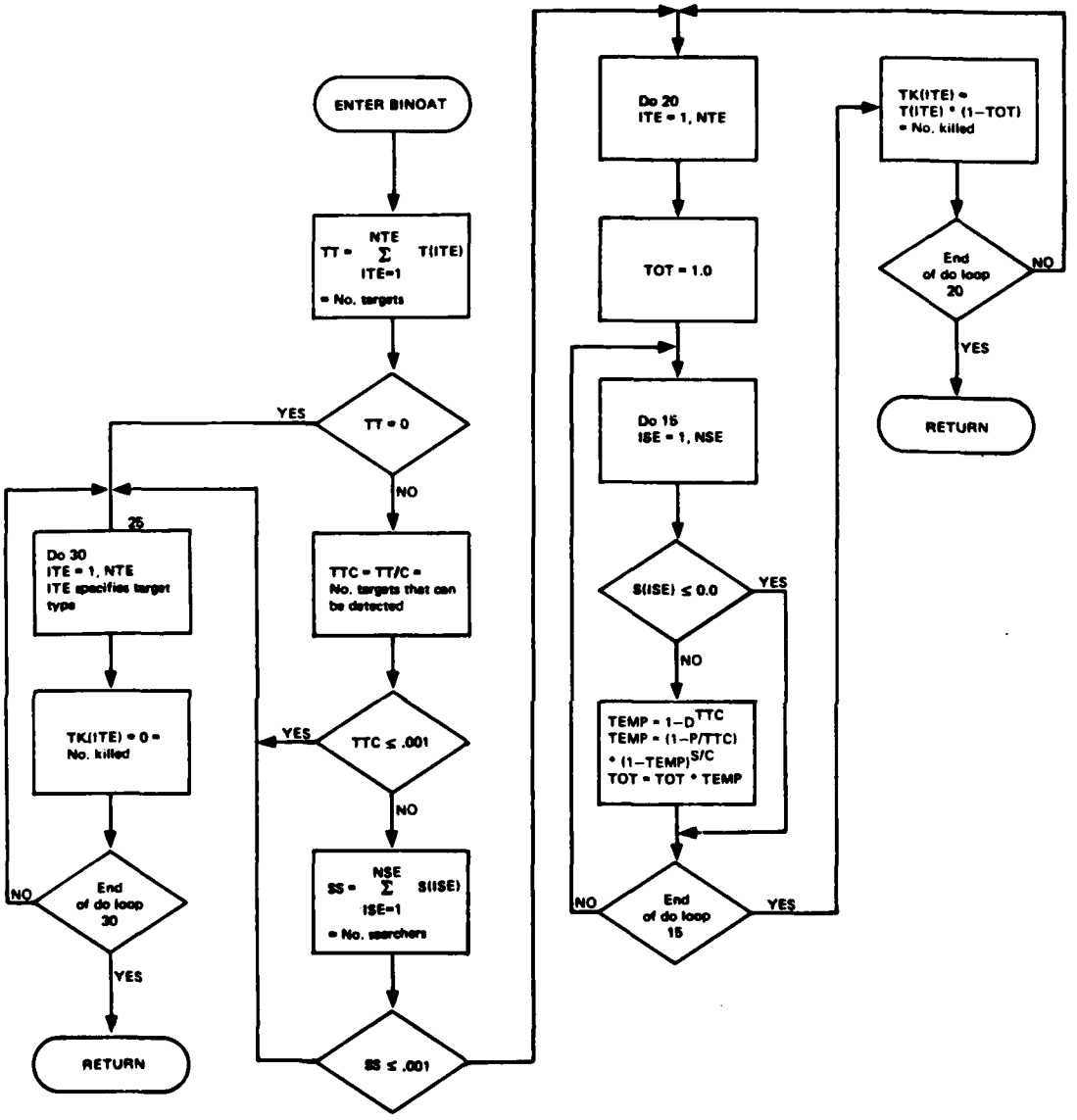


Figure 35. Flowchart of TACWAR Routine BINOAT

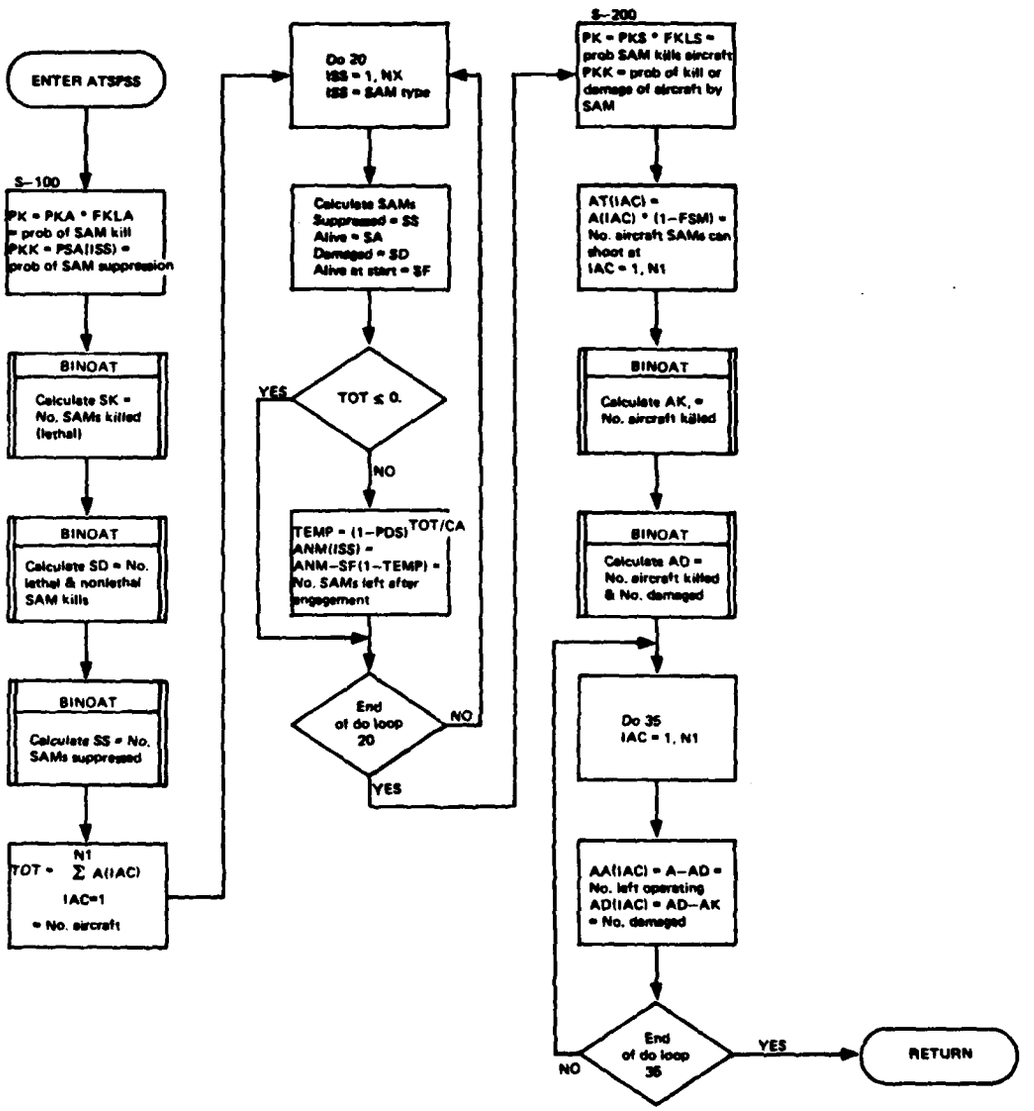


Figure 36. Flowchart of TACWAR Routine ATSPSS

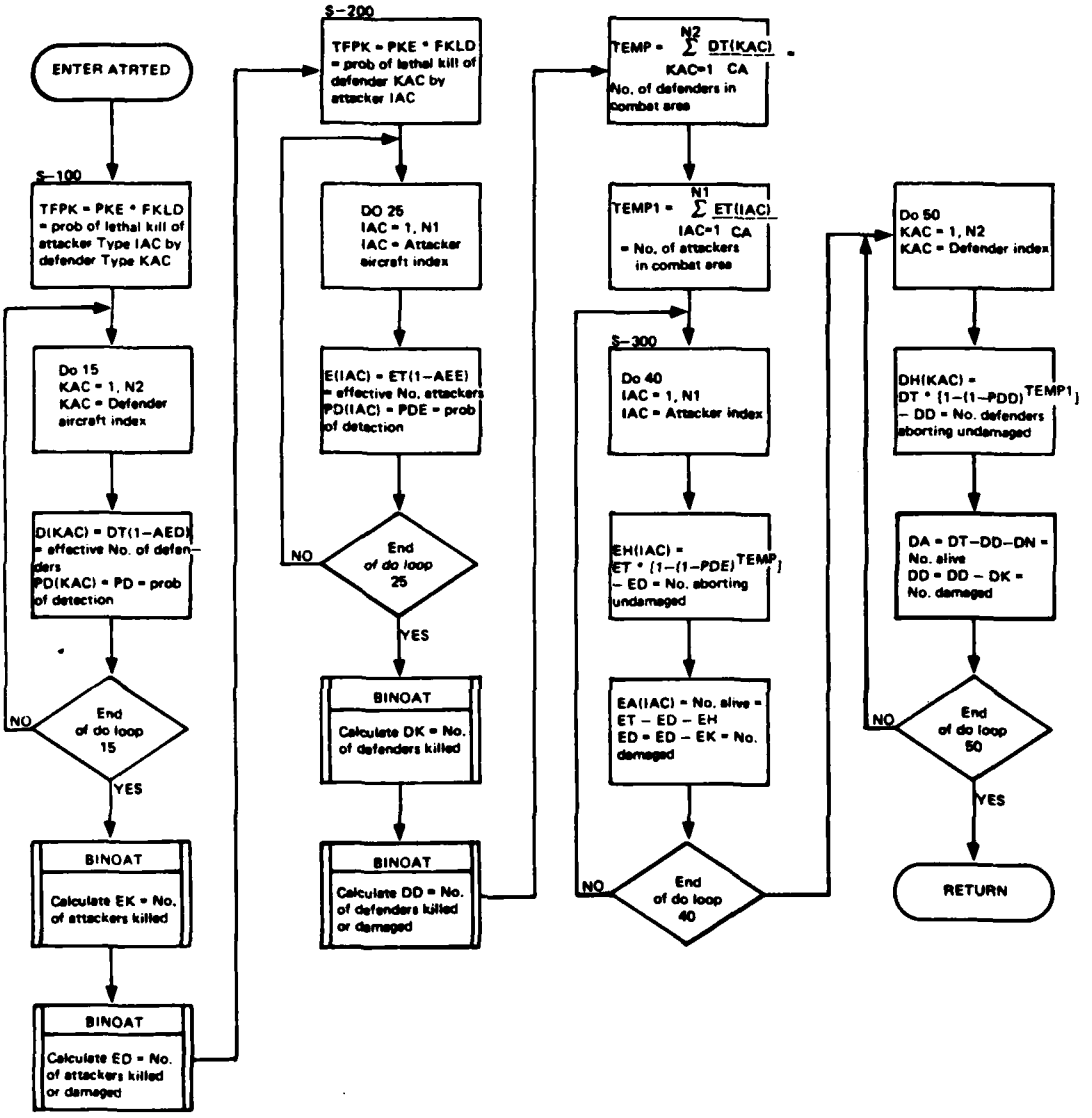


Figure 37. Flowchart of TACWAR Routine ATRTED

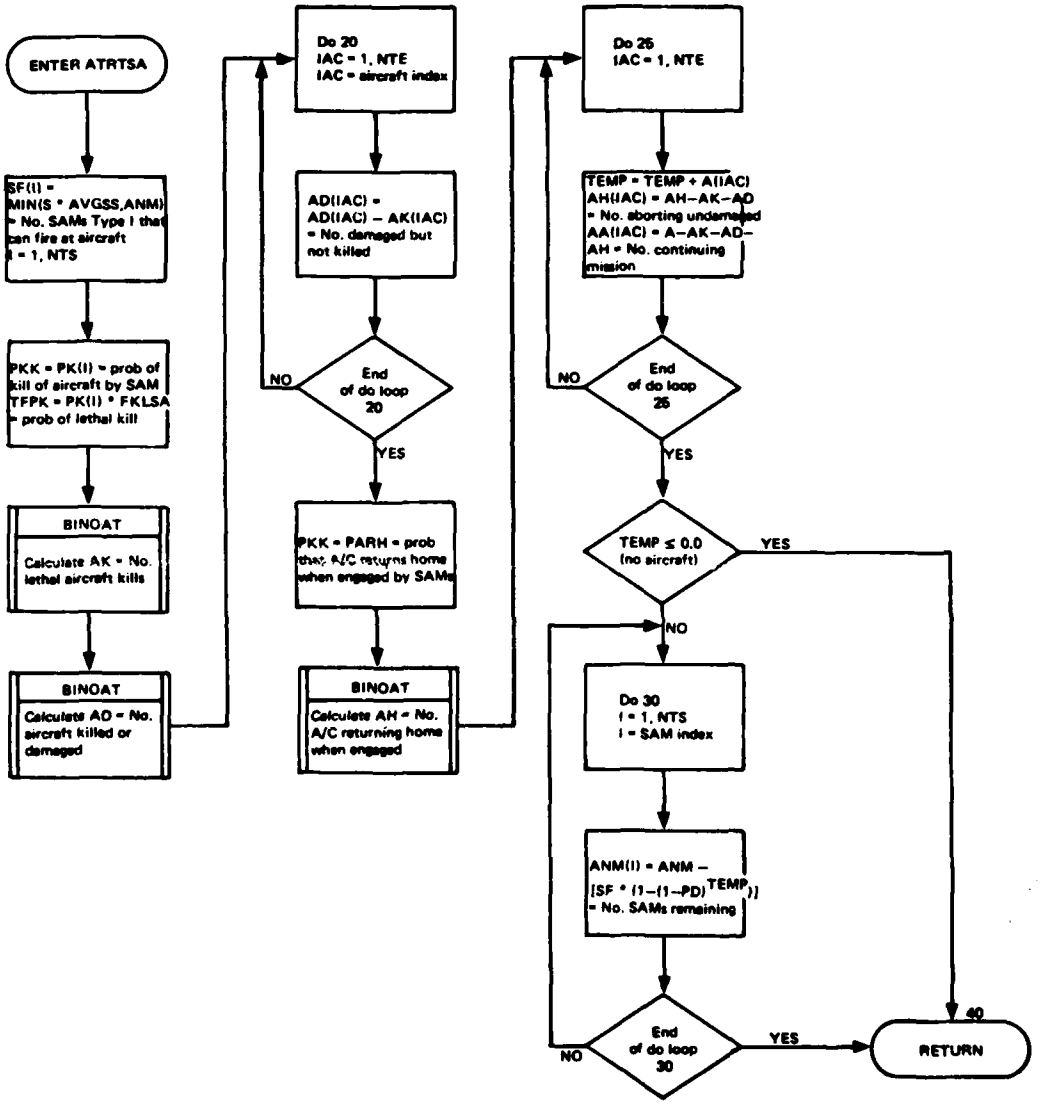


Figure 38. Flowchart of TACWAR Routine ATRTSA

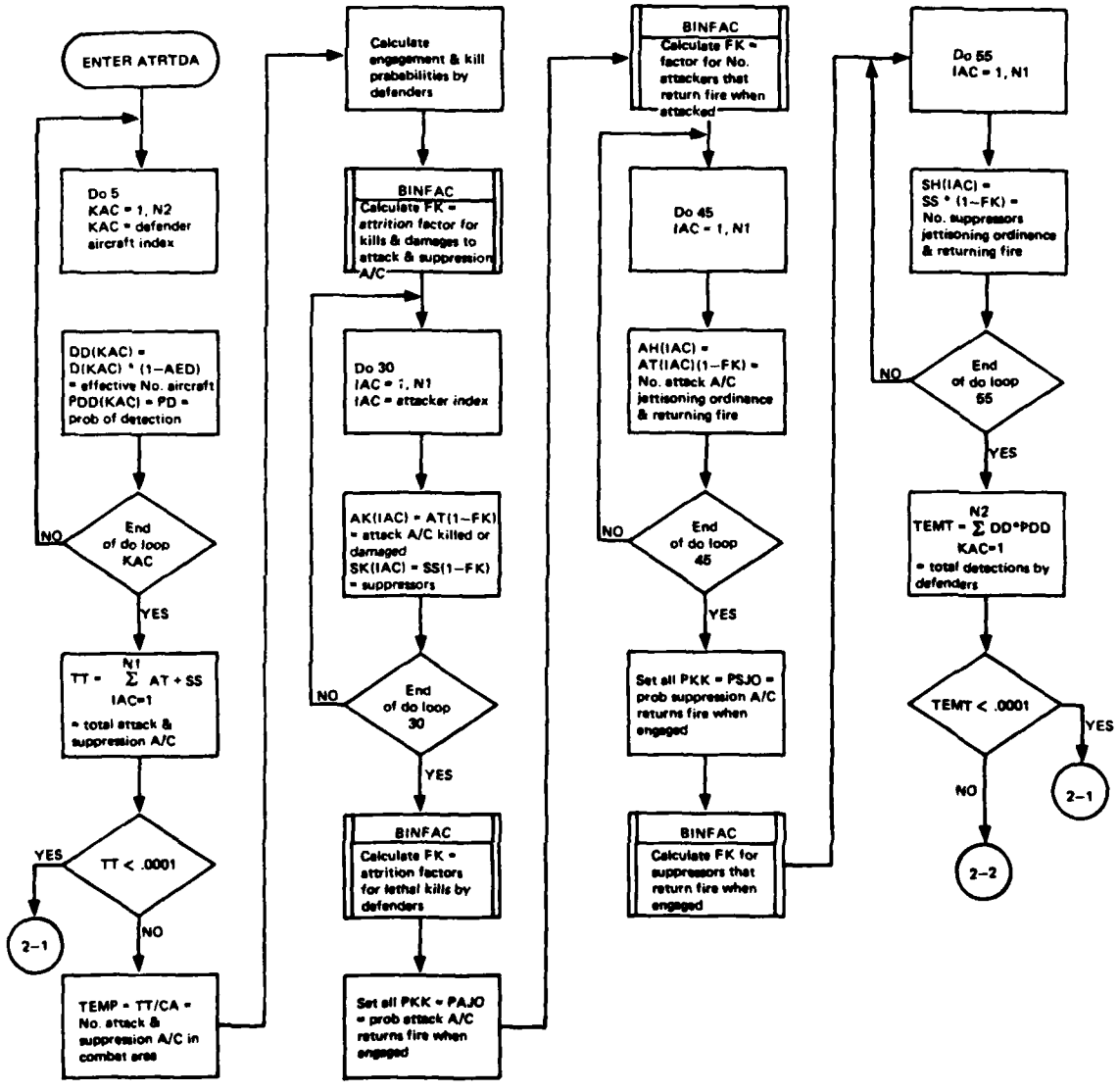


Figure 39. Flowchart of TACWAR Routine ATRTDA
(Part 1 of 2)

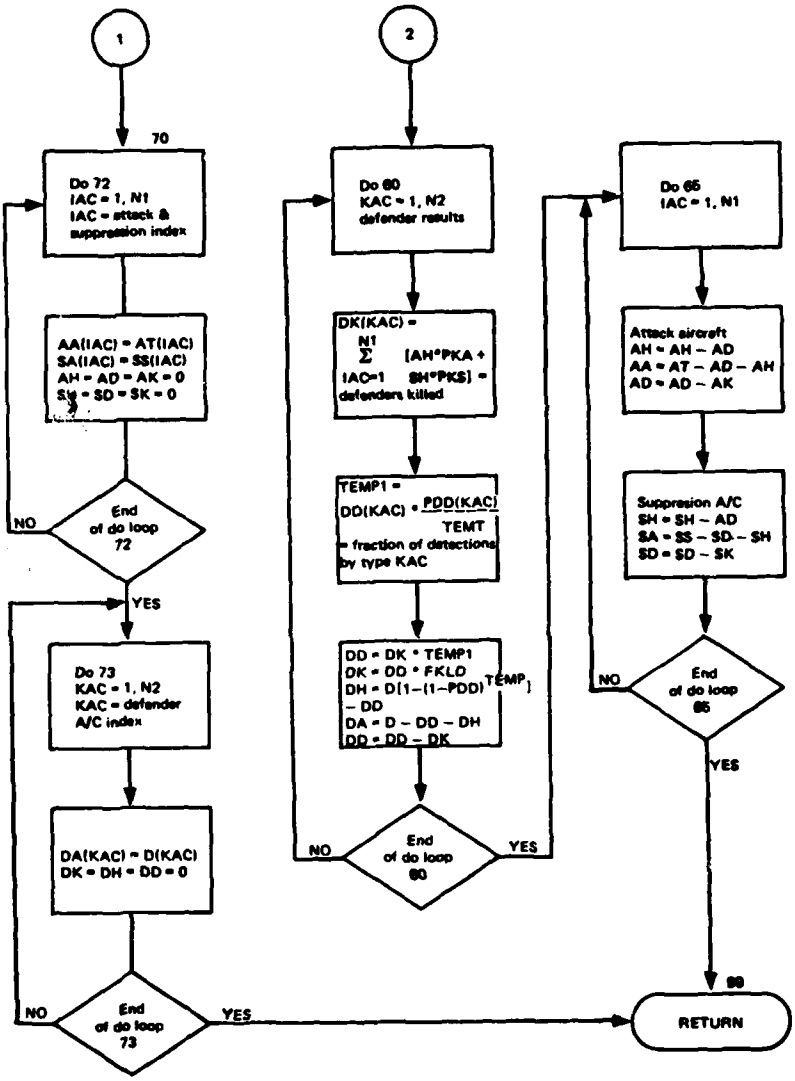


Figure 39. Flowchart of TACWAR Routine ATRTDA (Part 2 of 2)

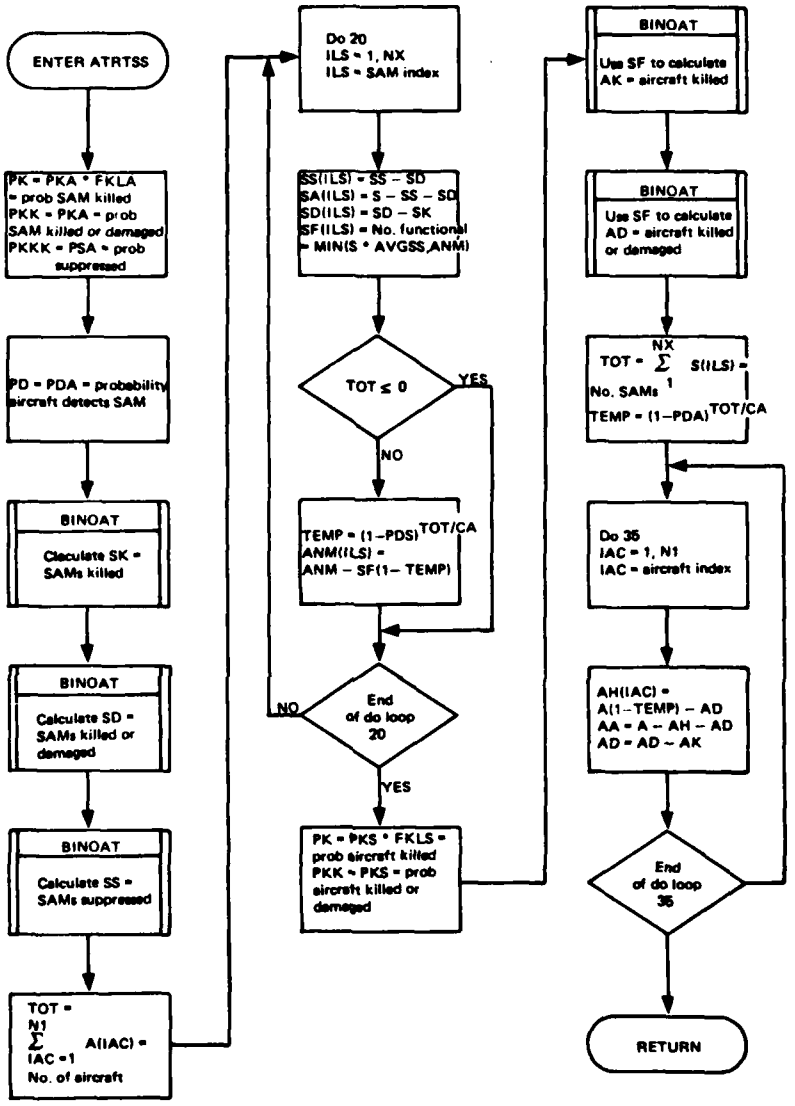


Figure 40. Flowchart of TACWAR Routine ATRTSS

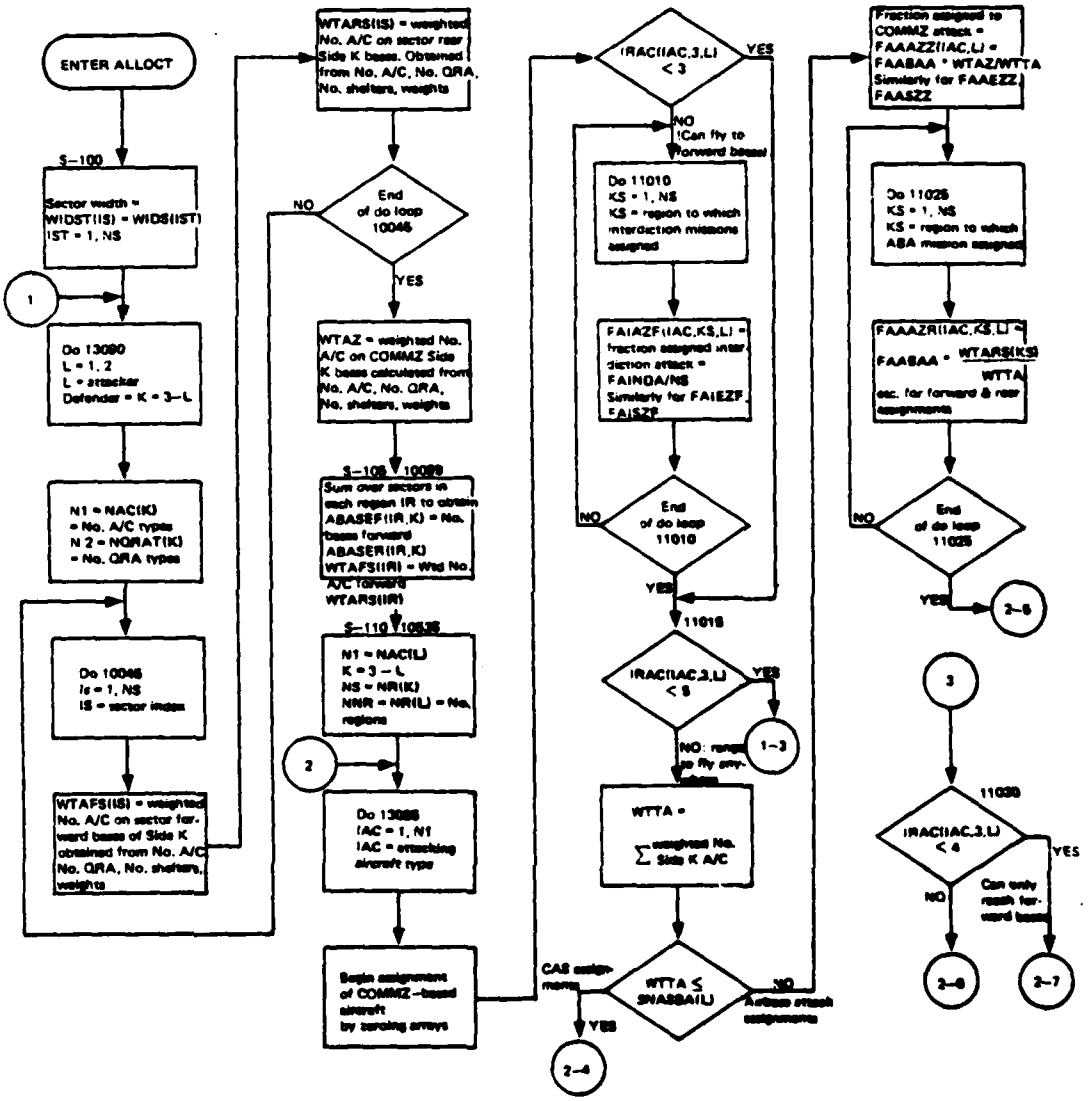


Figure 41. Flowchart of TACWAR Routine ALLOCT (Part 1 of 6)

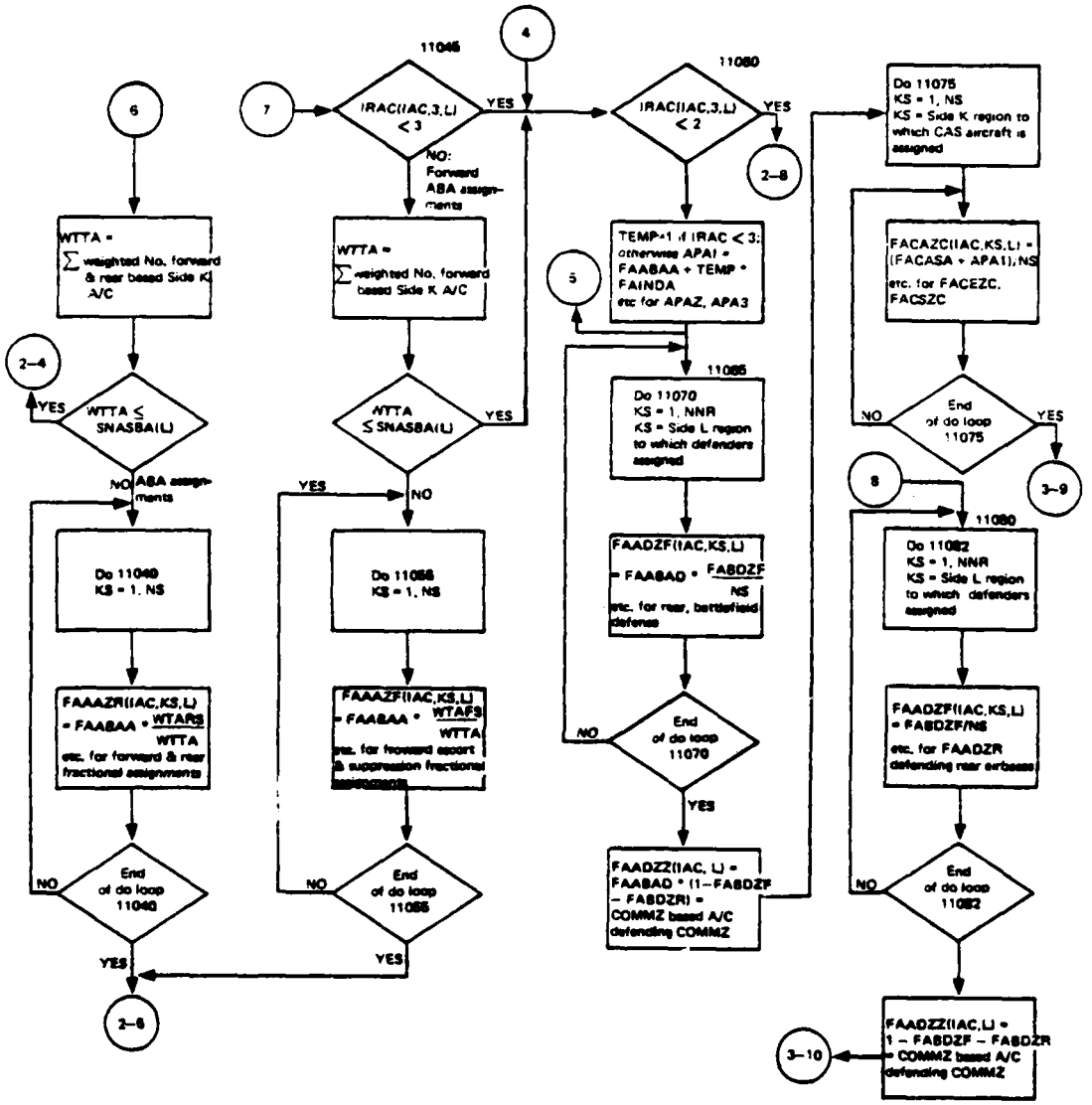


Figure 41. Flowchart of TACWAR Routine ALLOCT (Part 2 of 6)

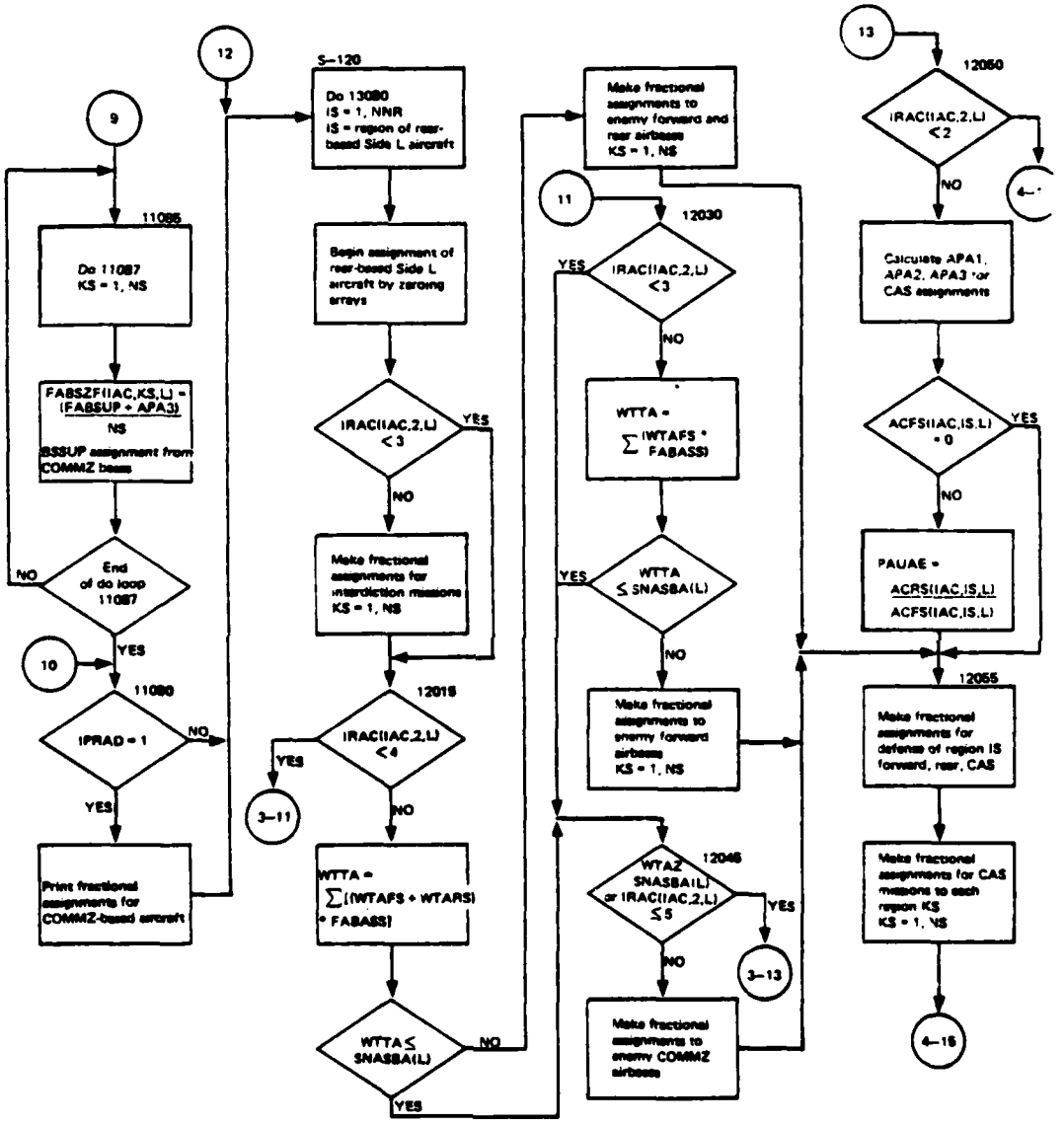


Figure 41. Flowchart of TACWAR Routine ALLOCT (Part 3 of 6)

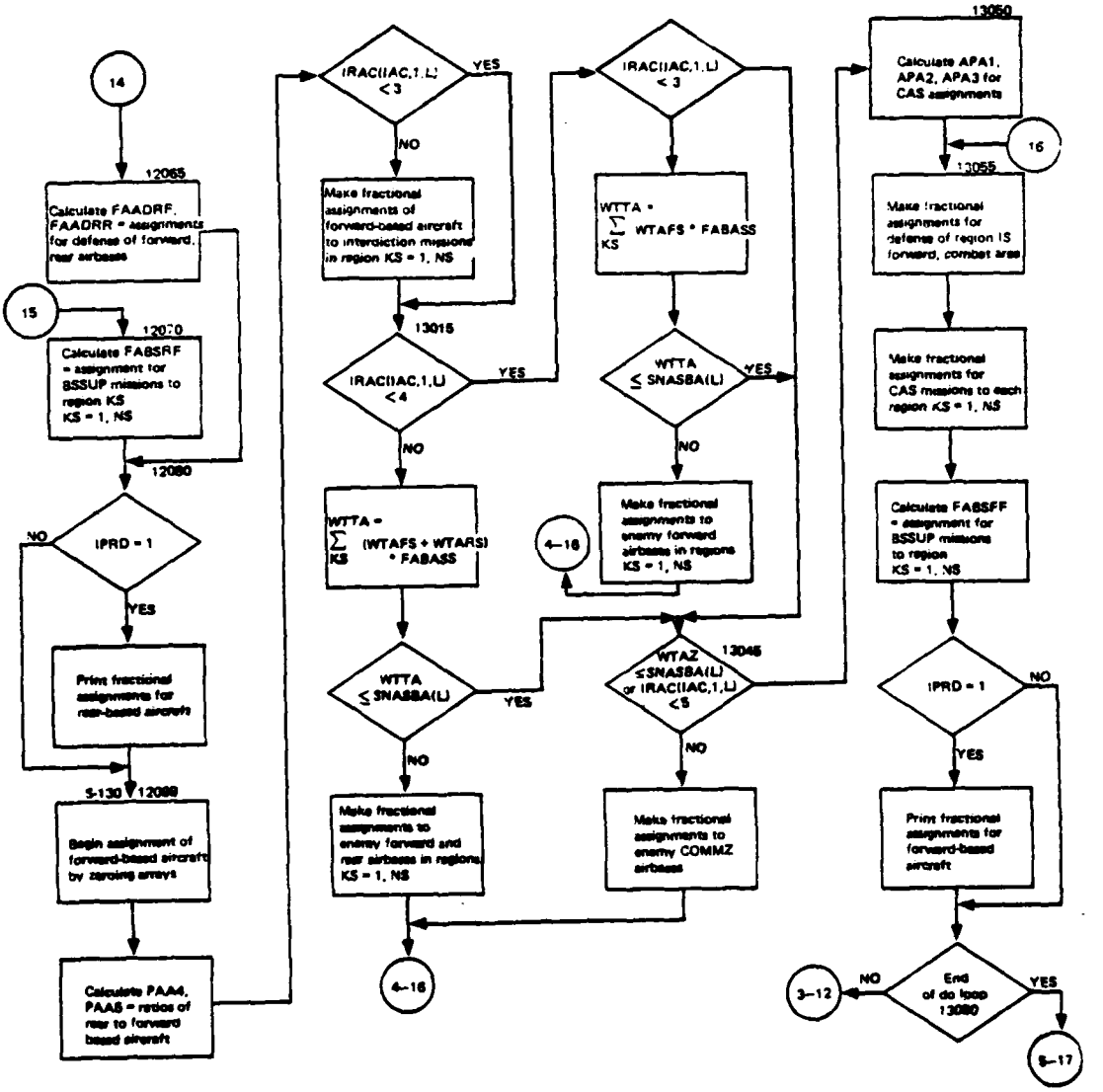


Figure 41. Flowchart of TACWAR Routine ALLOCT (Part 4 of 6)

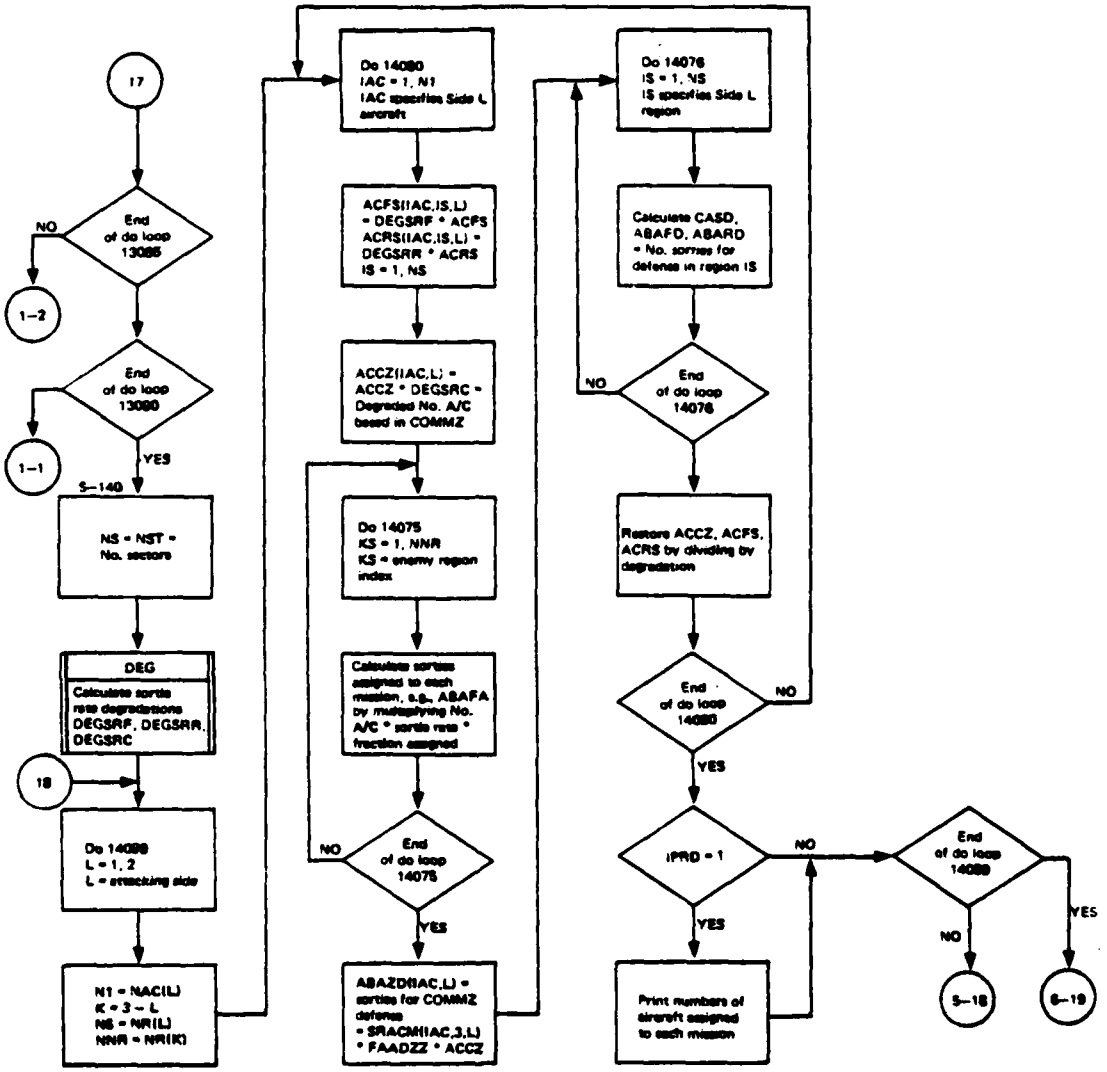


Figure 41. Flowchart of TACWAR Routine ALLOCT (Part 5 of 6)

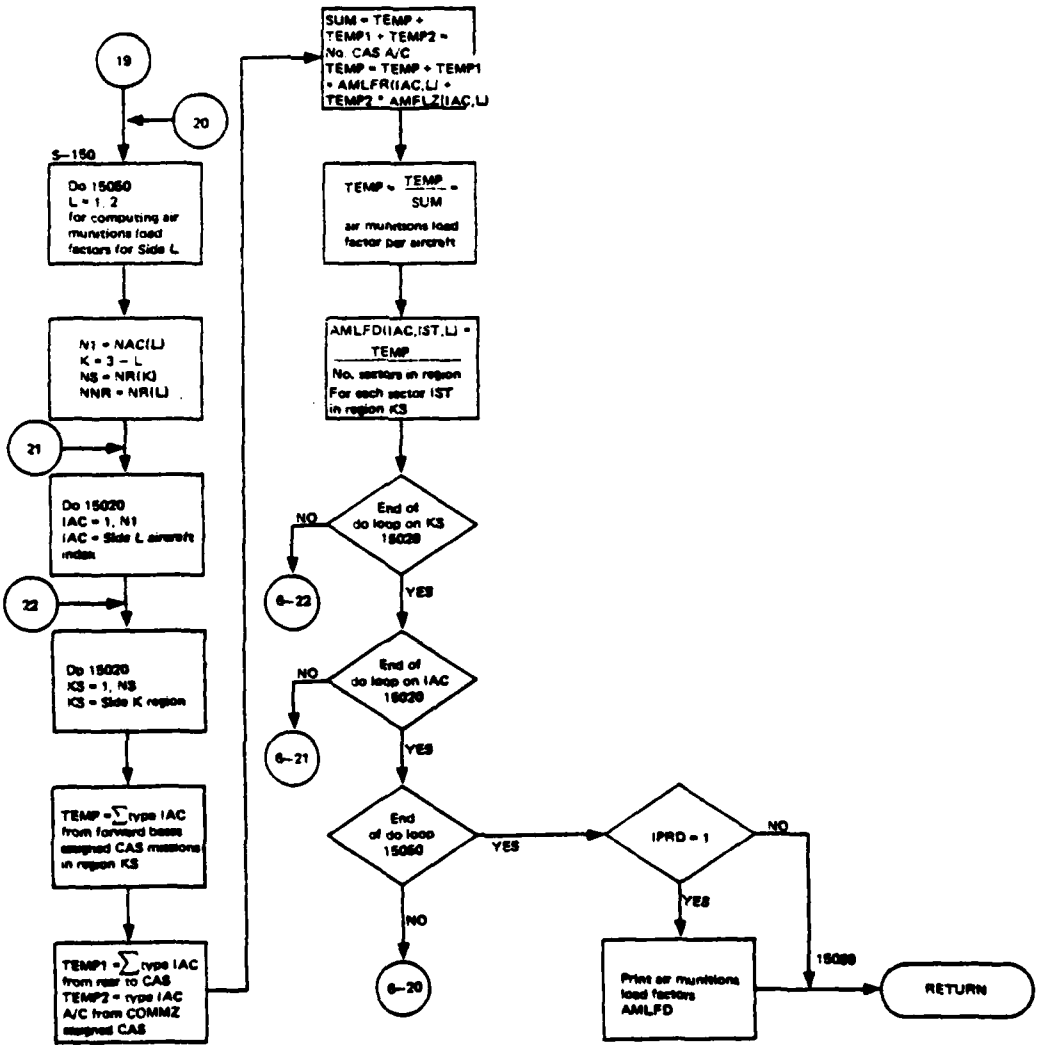


Figure 41. Flowchart of TACWAR Routine ALLOCT (Part 6 of 6)

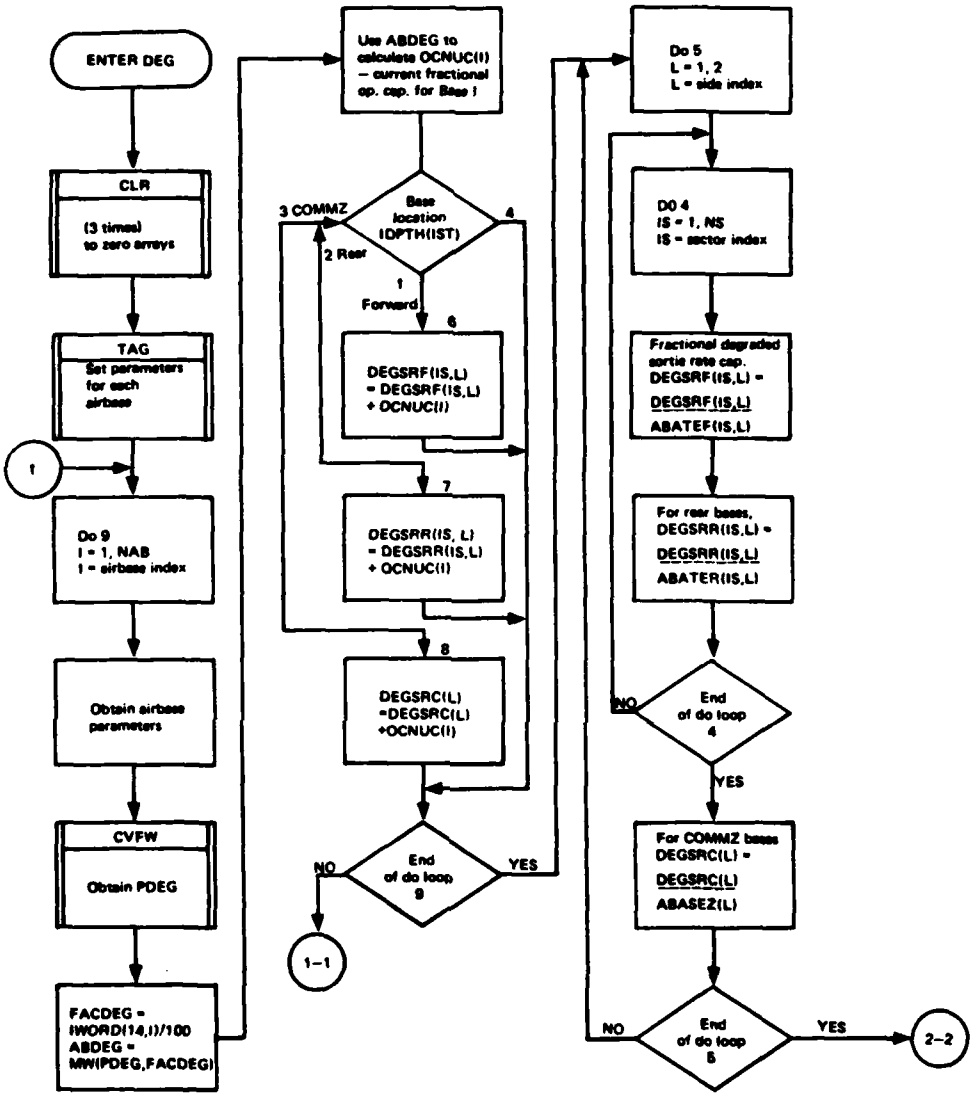


Figure 42. Flowchart of TACWAR Routine DEG
(Part 1 of 2)

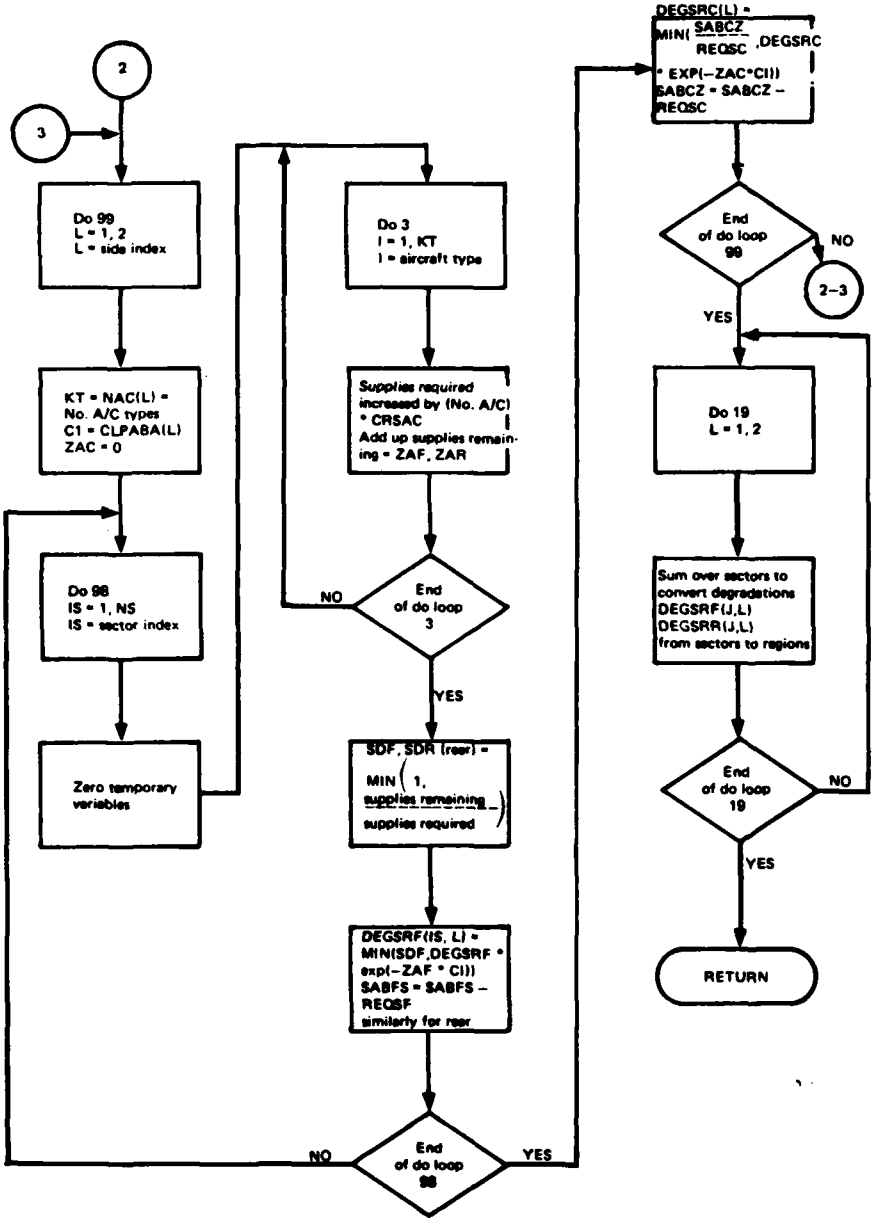


Figure 42. Flowchart of TACWAR Routine DEG (Part 2 of 2)

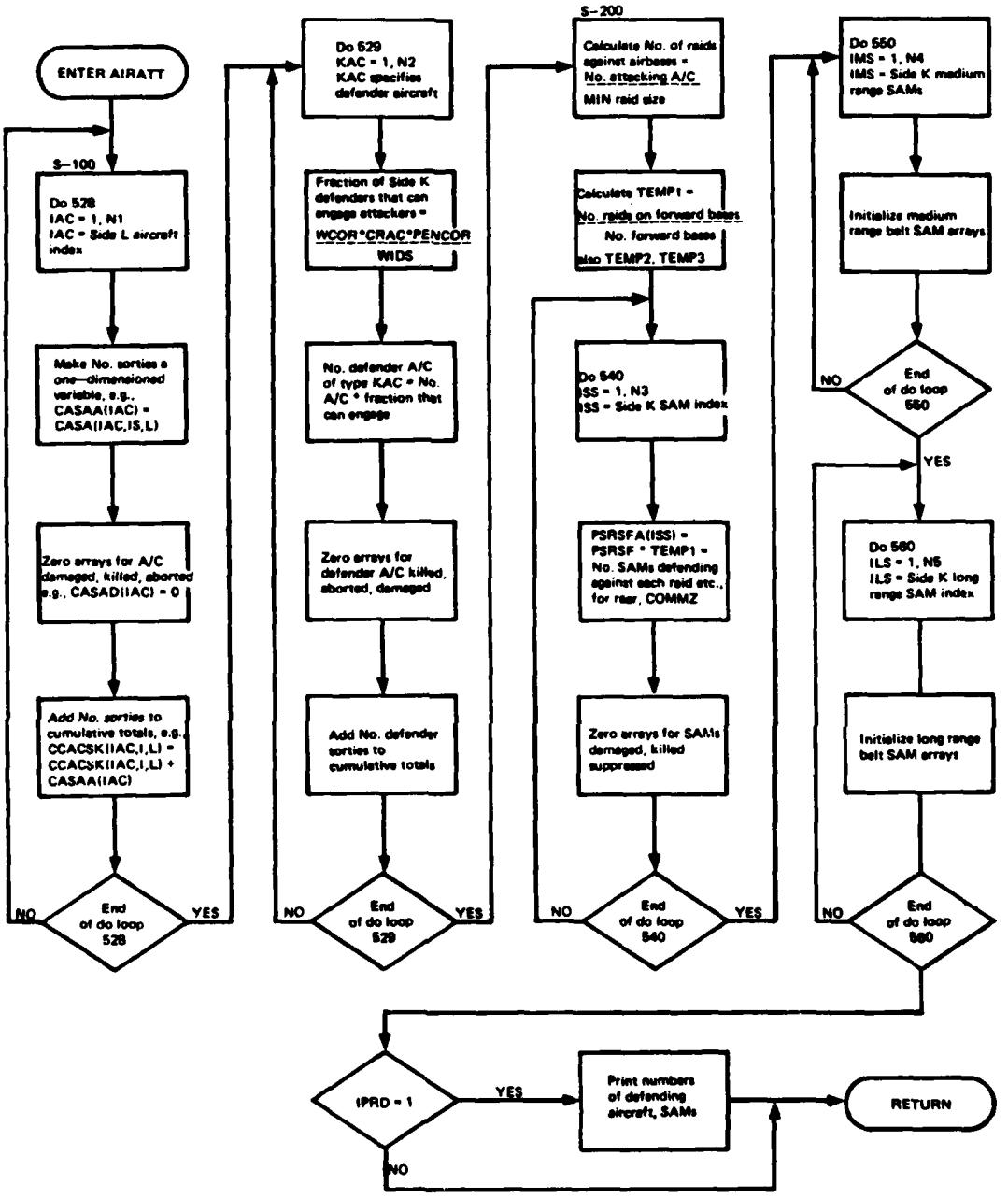


Figure 43. Flowchart of TACWAR Routine AIRATT

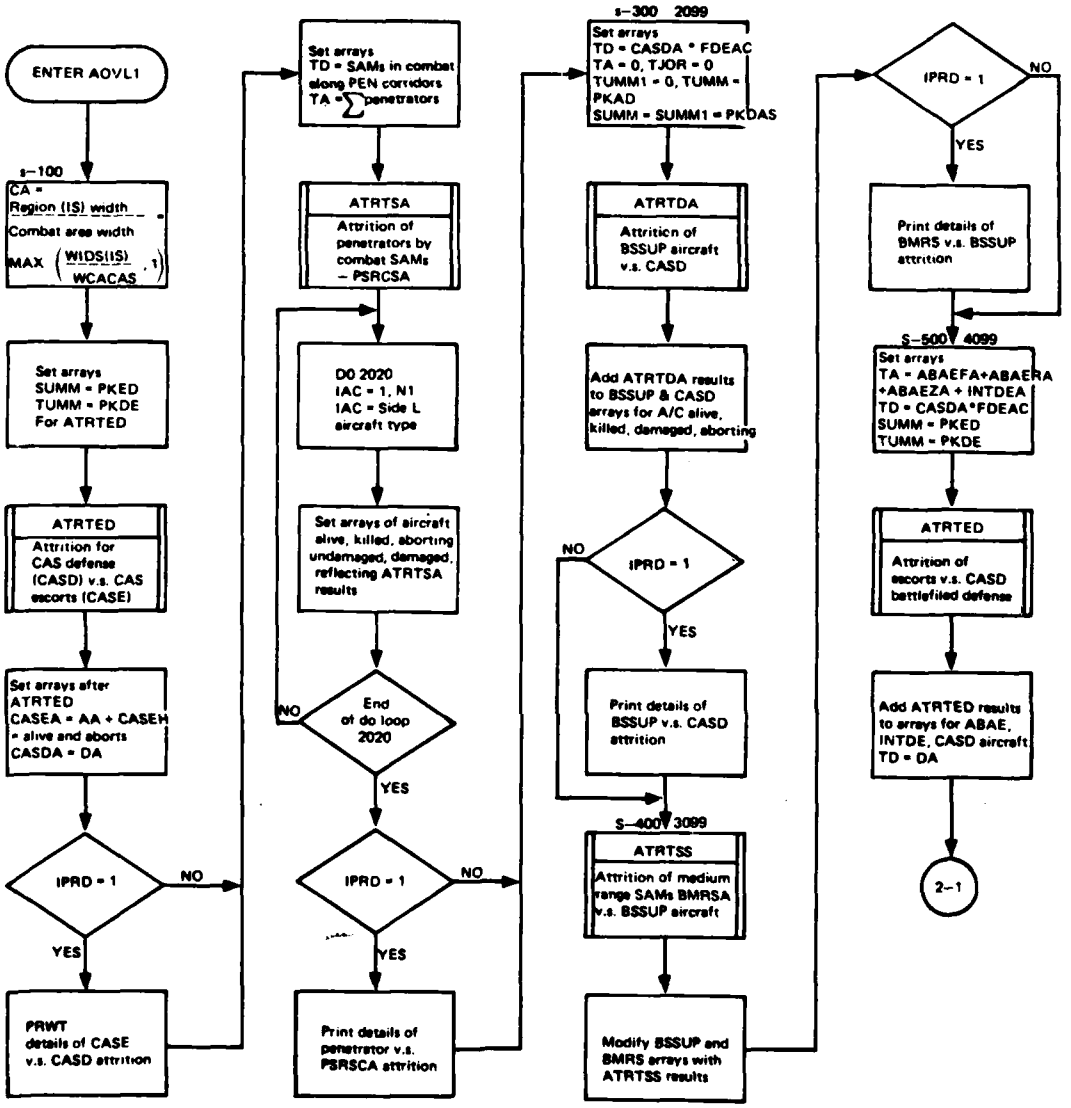


Figure 44. Flowchart of TACWAR Routine AOVL1 (Part 1 of 2)

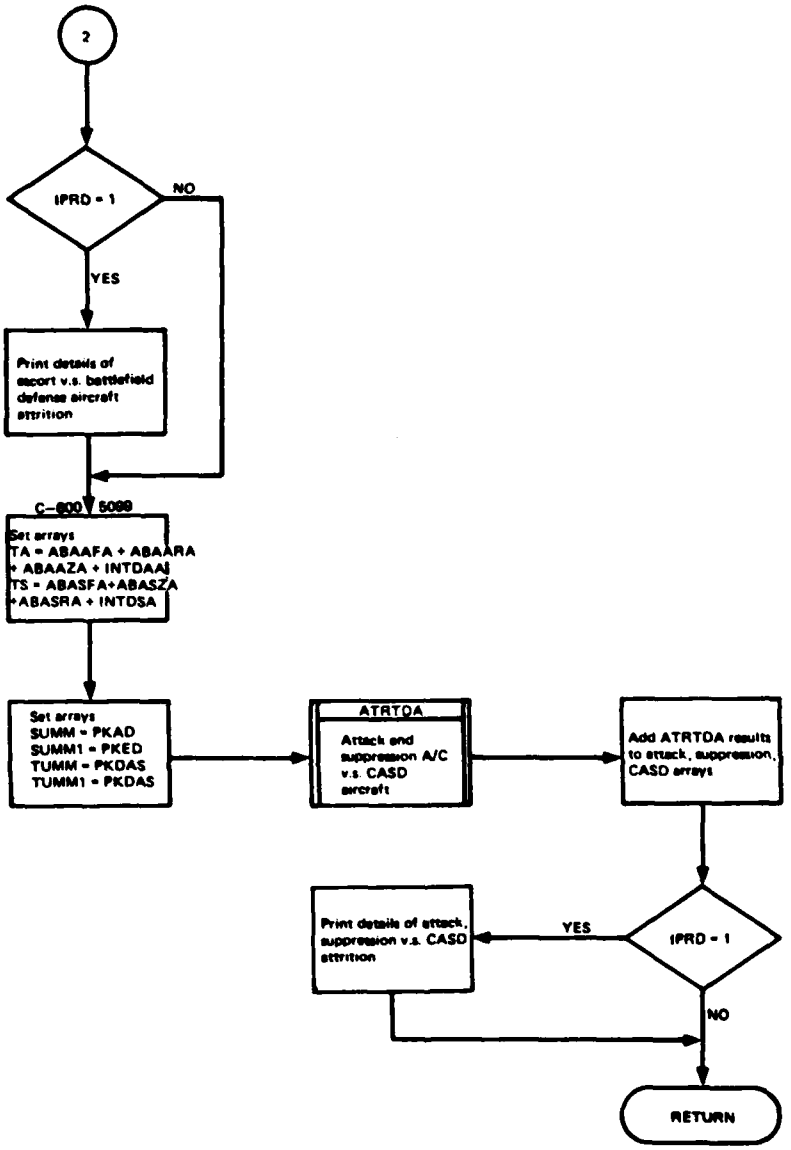


Figure 44. Flowchart of TACWAR Routine AOVL1 (Part 2 of 2)

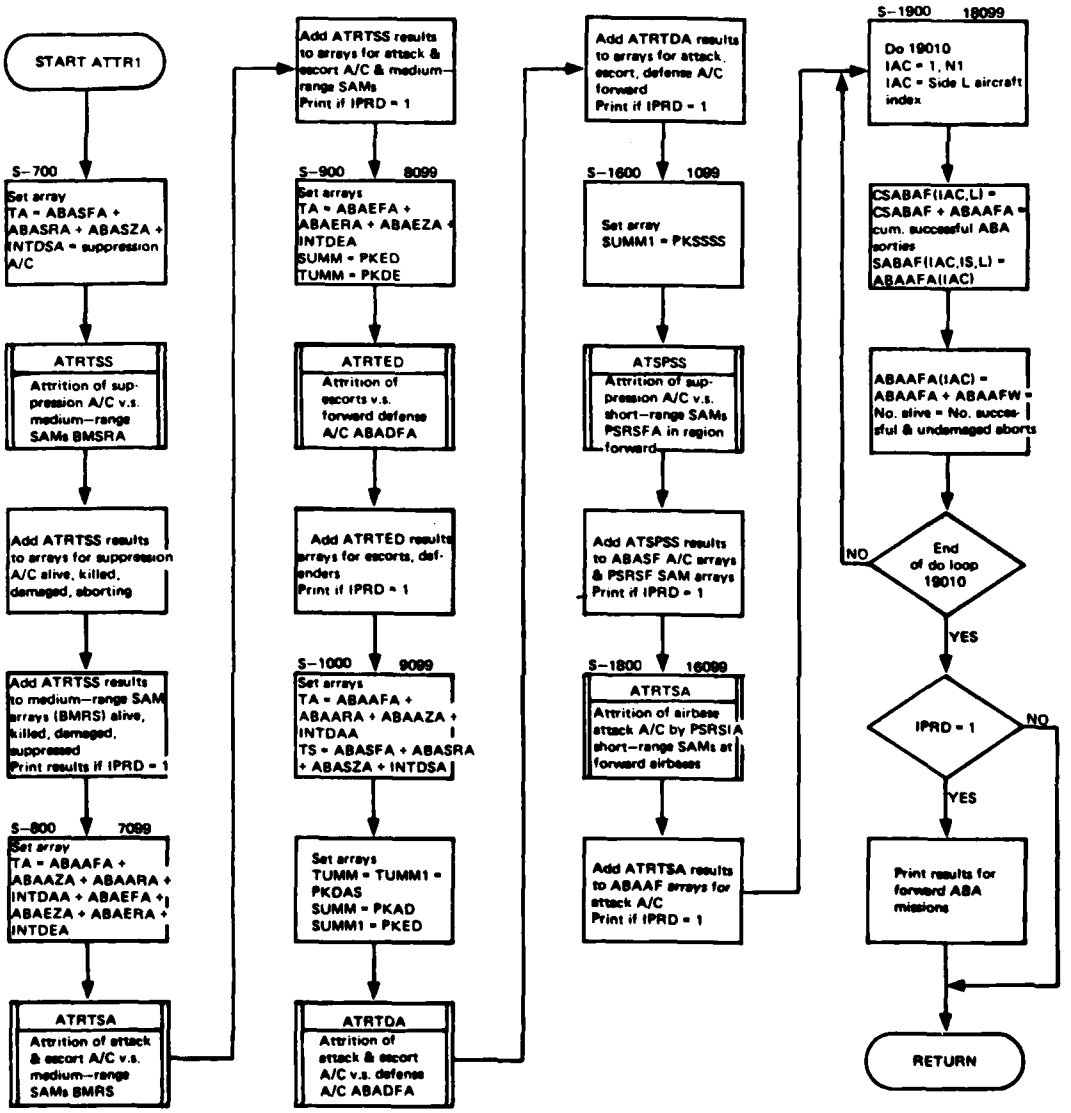


Figure 45. Flowchart of TACWAR Routine ATTR1

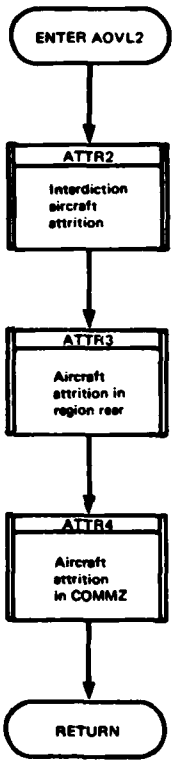


Figure 46. Flowchart of TACWAR Routine AOVL2

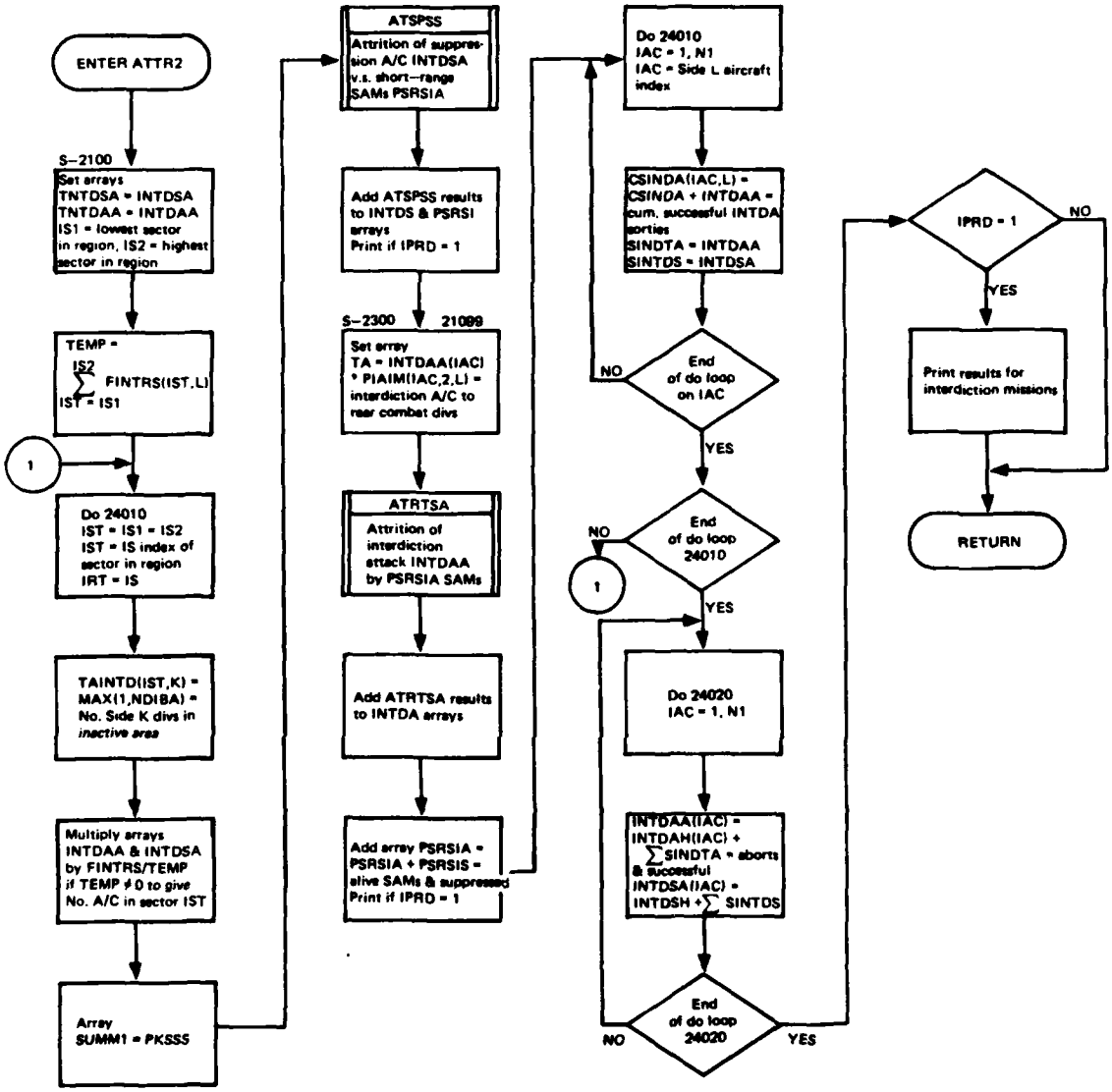


Figure 47. Flowchart of TACWAR Routine ATTR2

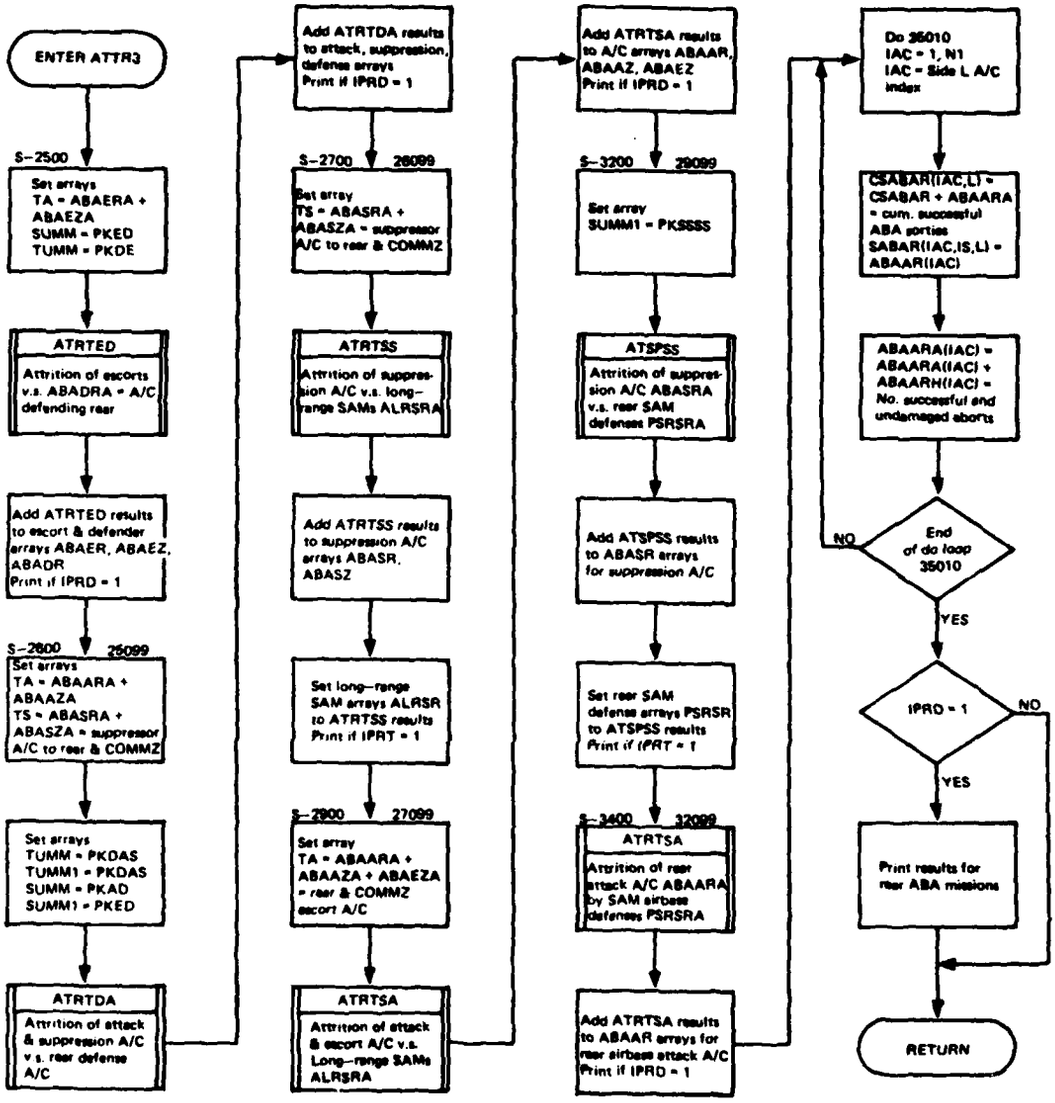


Figure 48. Flowchart of TACWAR Routine ATTR3

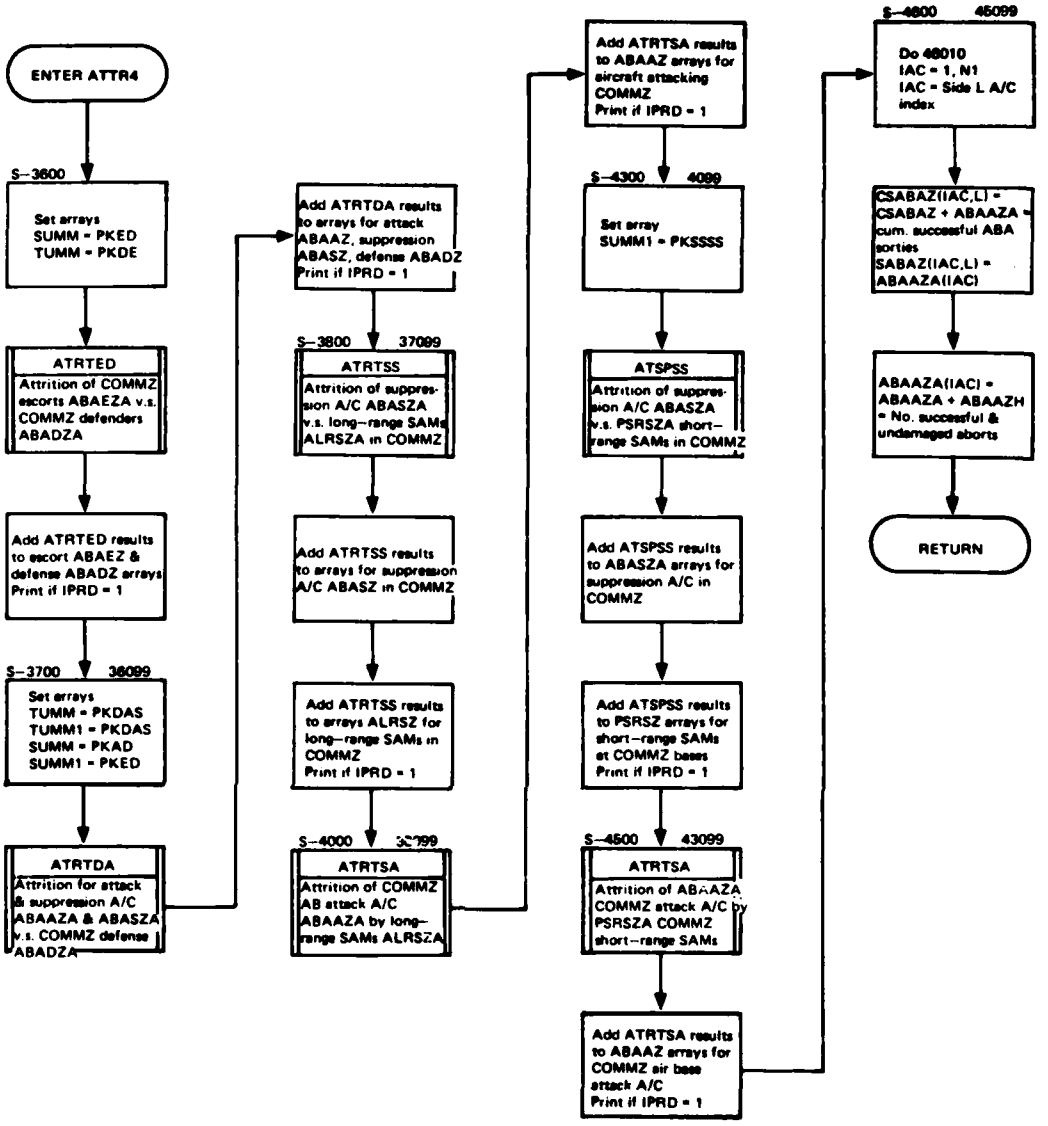


Figure 49. Flowchart of TACWAR Routine ATTR4

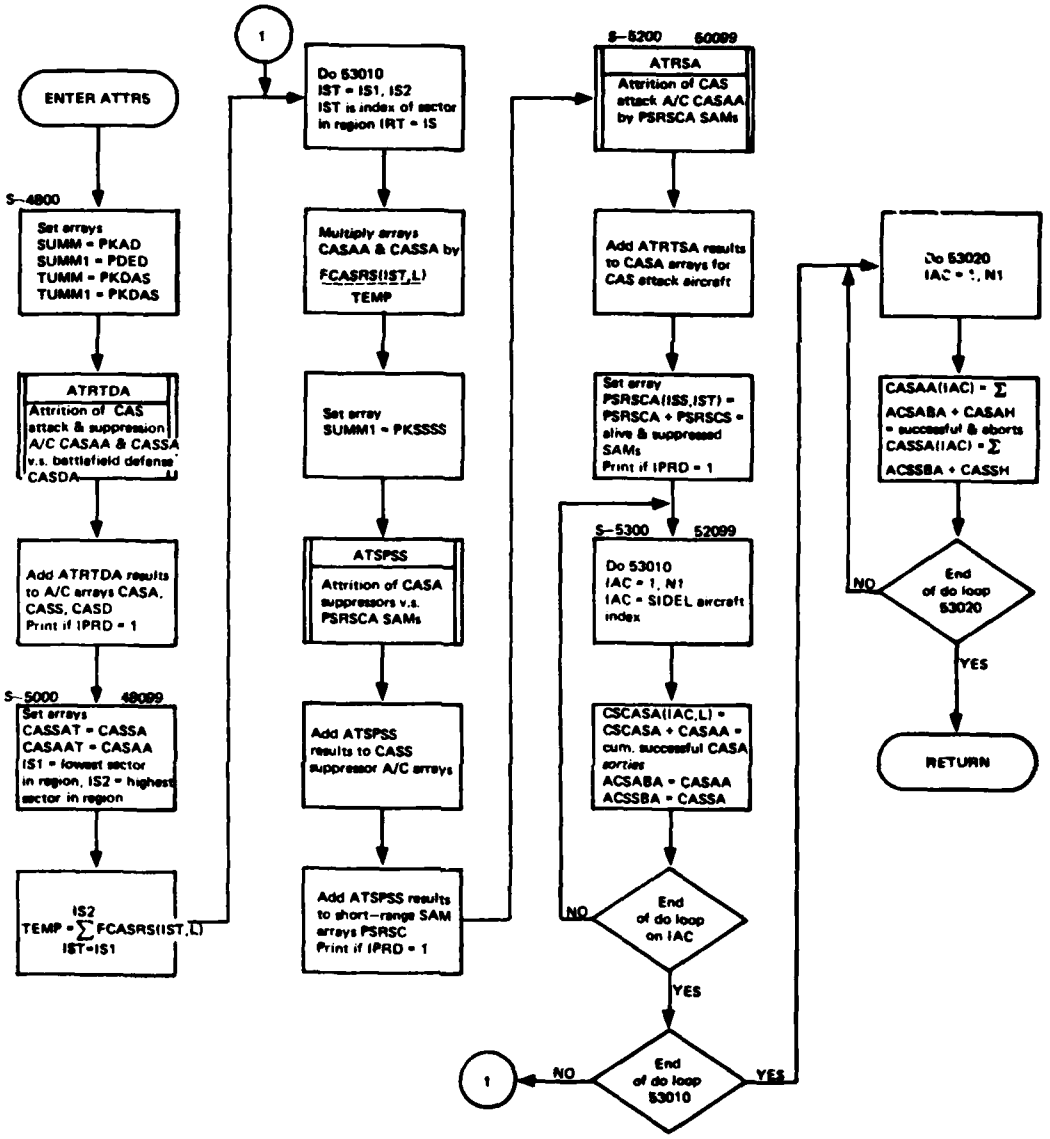


Figure 50. Flowchart of TACWAR Routine ATTR5

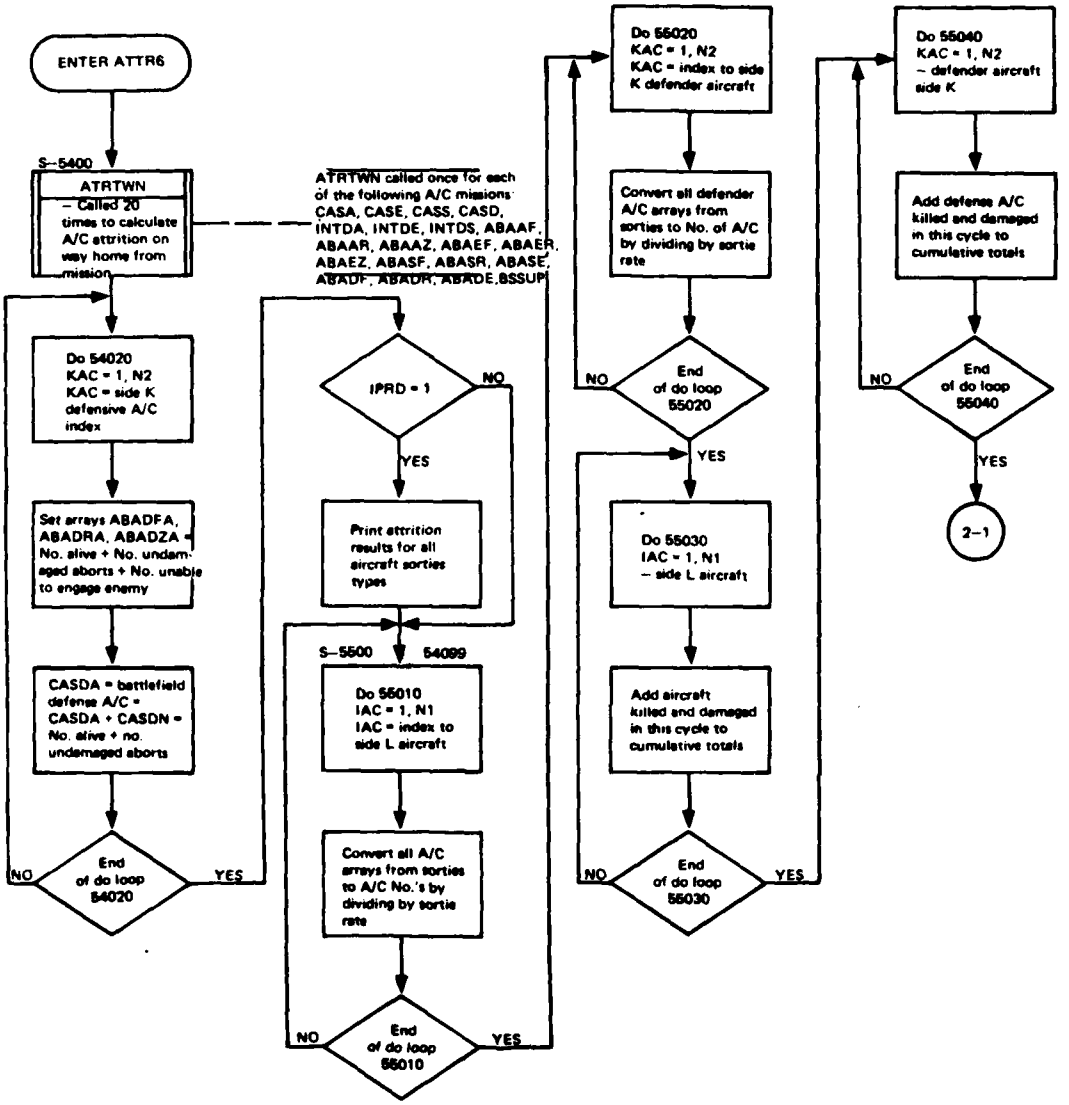


Figure 51. Flowchart of TACWAR Routine ATTR6 (Part 1 of 2)

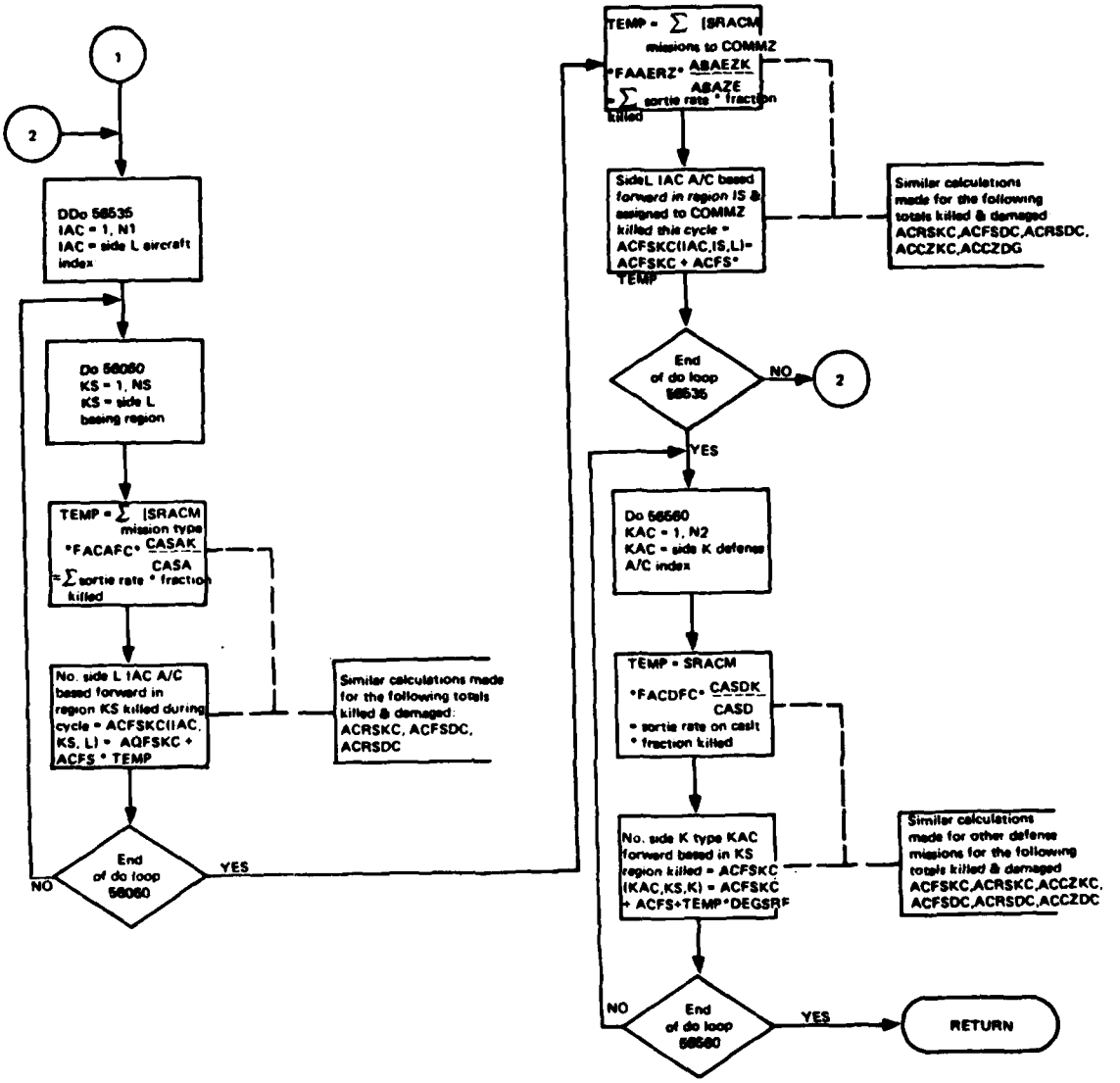


Figure 51. Flowchart of TACWAR Routine ATTR6 (Part 2 of 2)

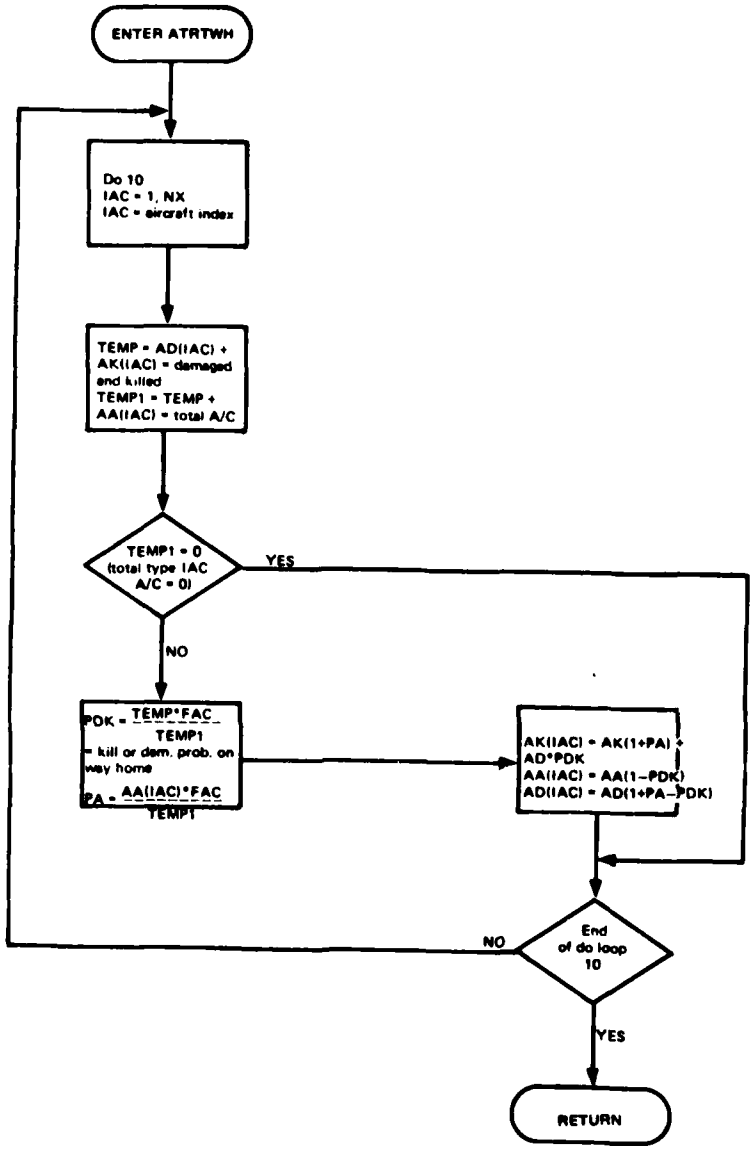


Figure 52. Flowchart of TACWAR Routine ATRTWH

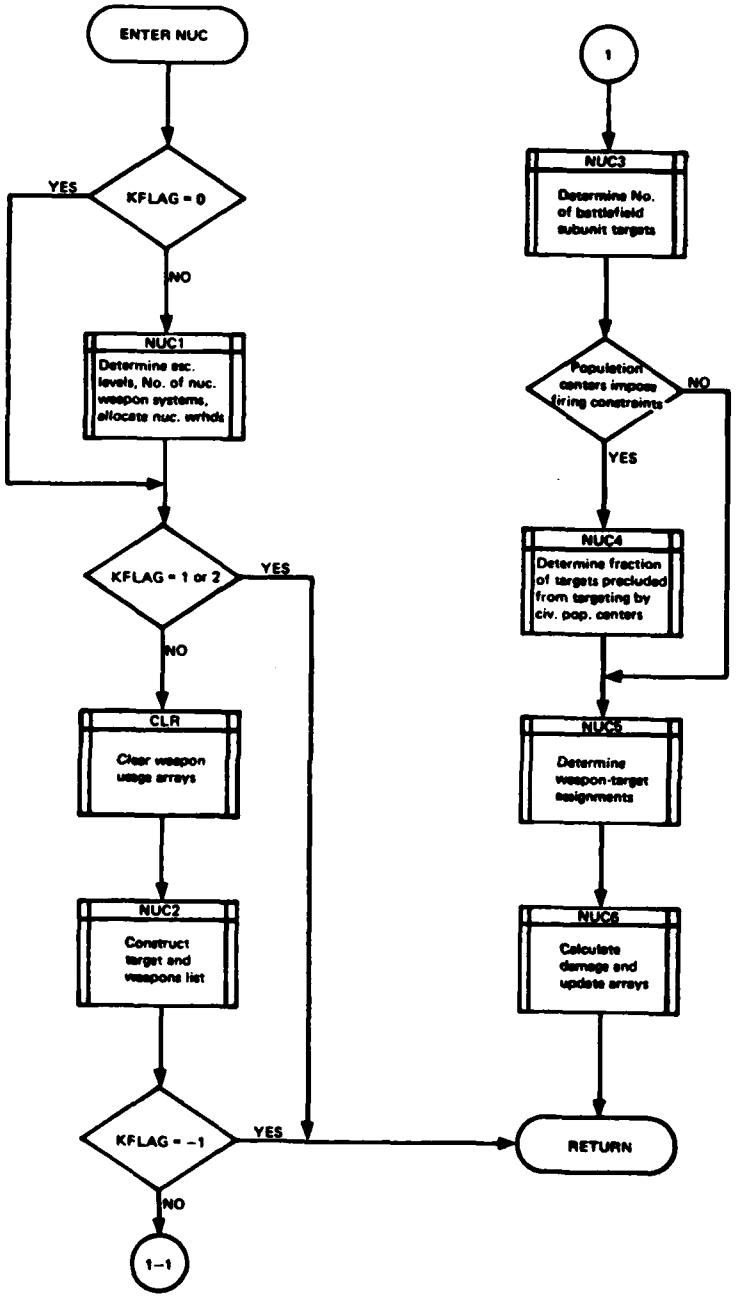


Figure 53. Flowchart of TACWAR Routine NUC

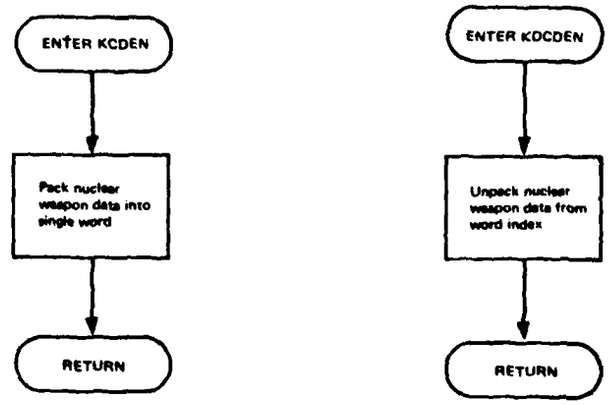


Figure 54. Flowcharts of TACWAR Routines KCDEN and KDCDEN

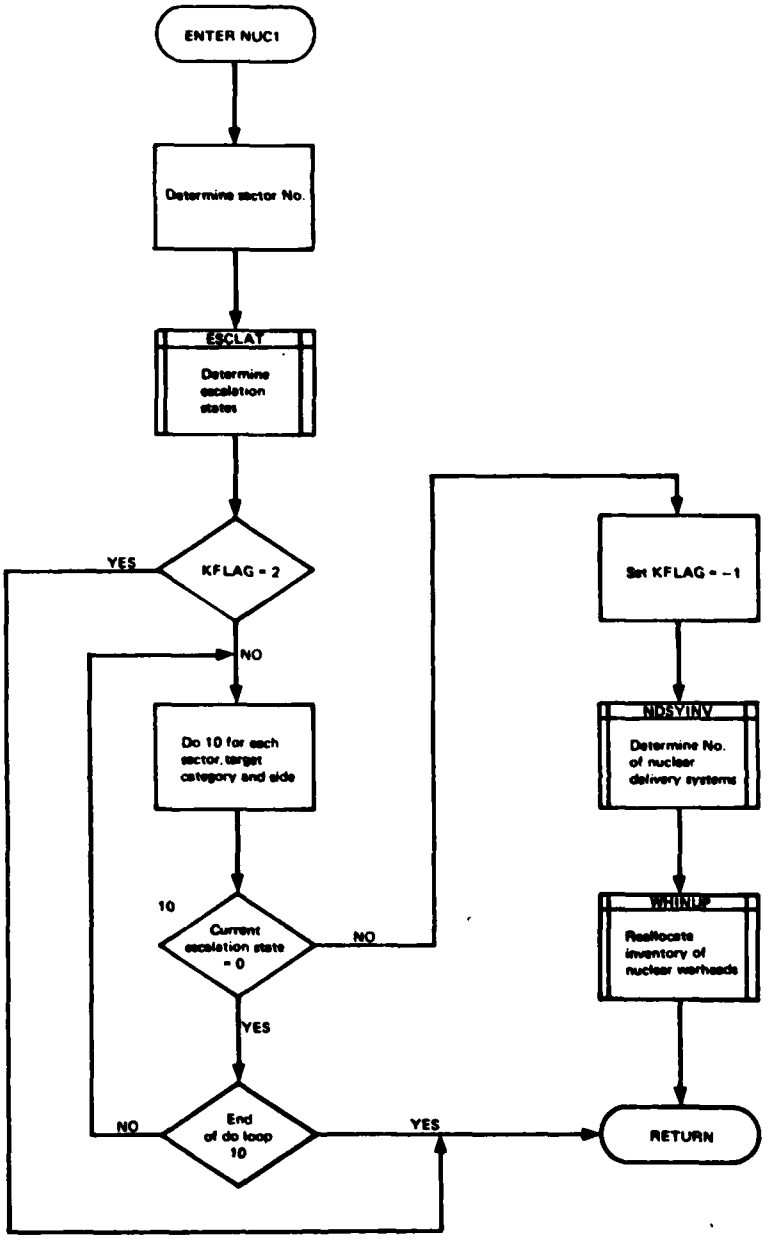


Figure 55. Flowchart of TACWAR Routine NUC1

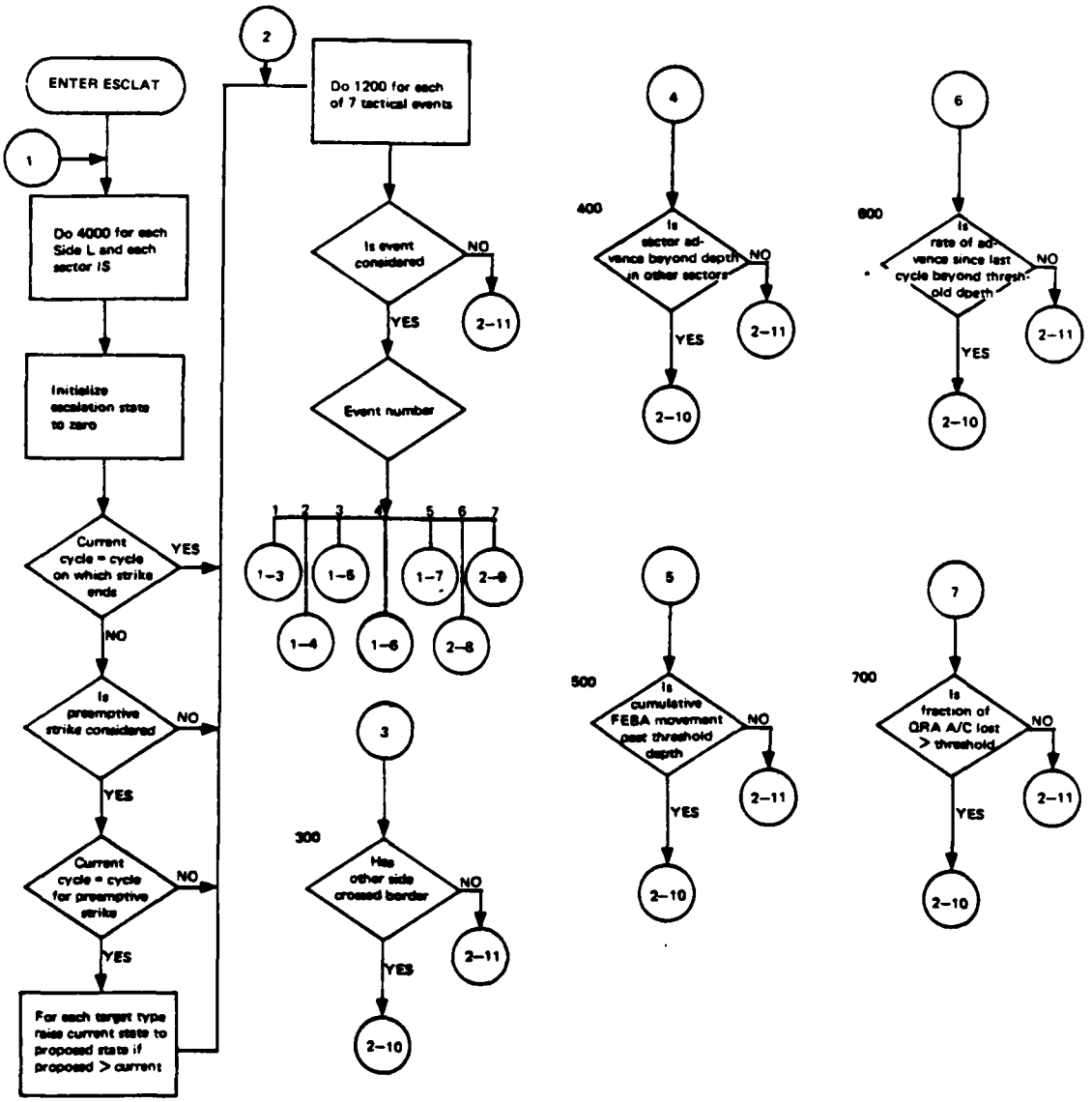


Figure 56. Flowchart of TACWAR Routine ESCLAT (Part 1 of 2)

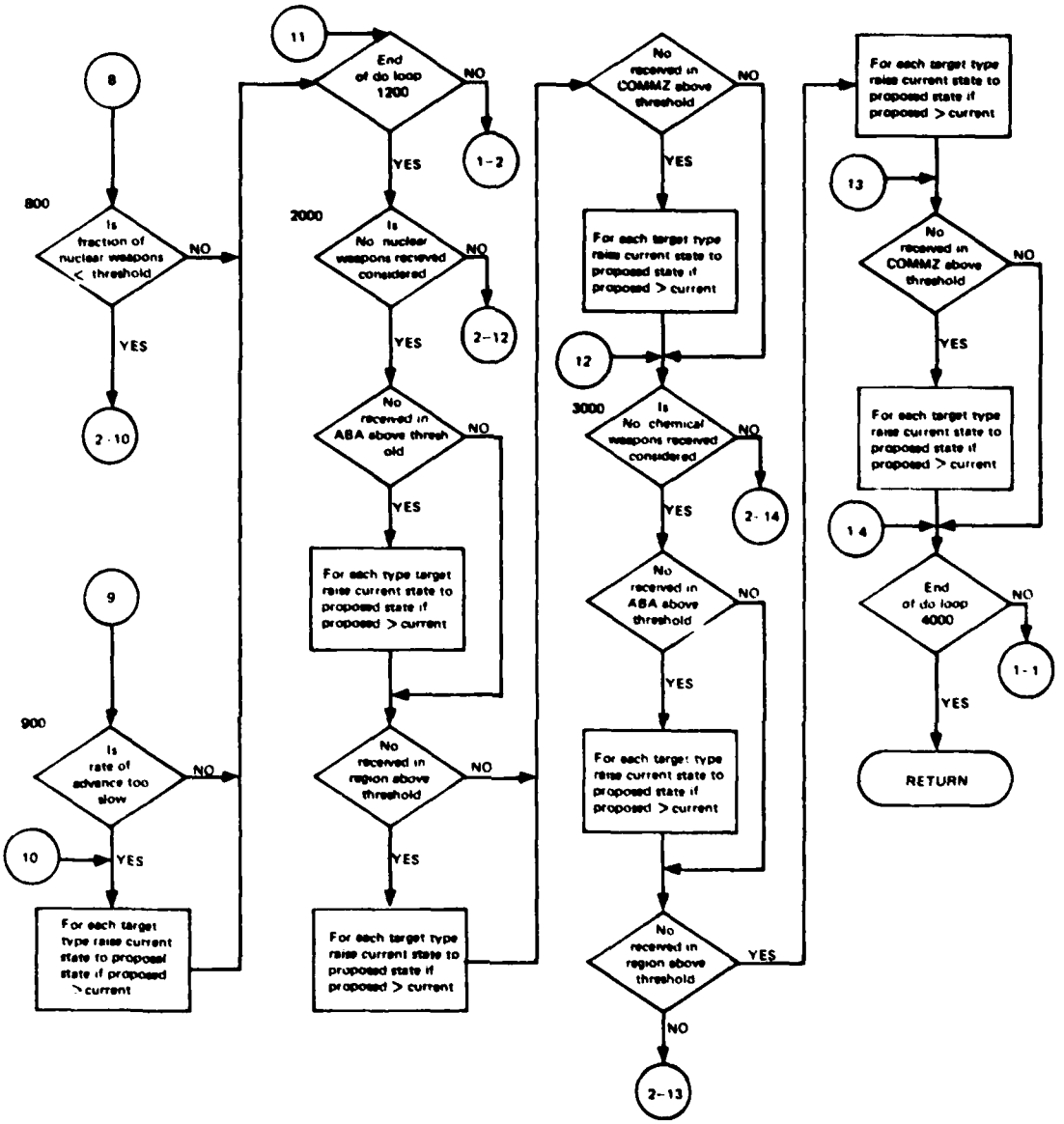


Figure 56. Flowchart of TACWAR Routine ESCLAT (Part 2 of 2)

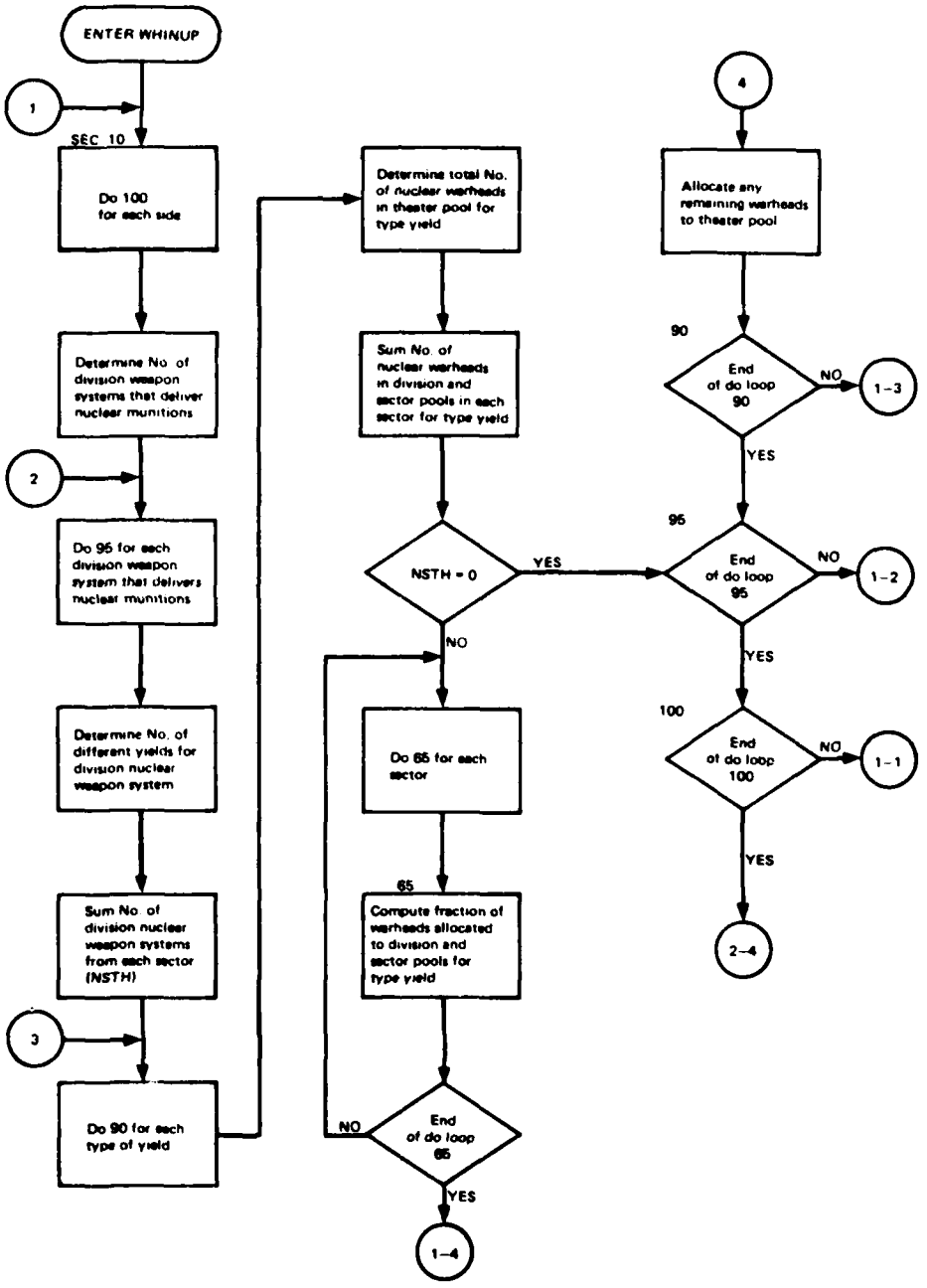


Figure 57. Flowchart of TACWAR Routine WHINUP (Part 1 of 2)

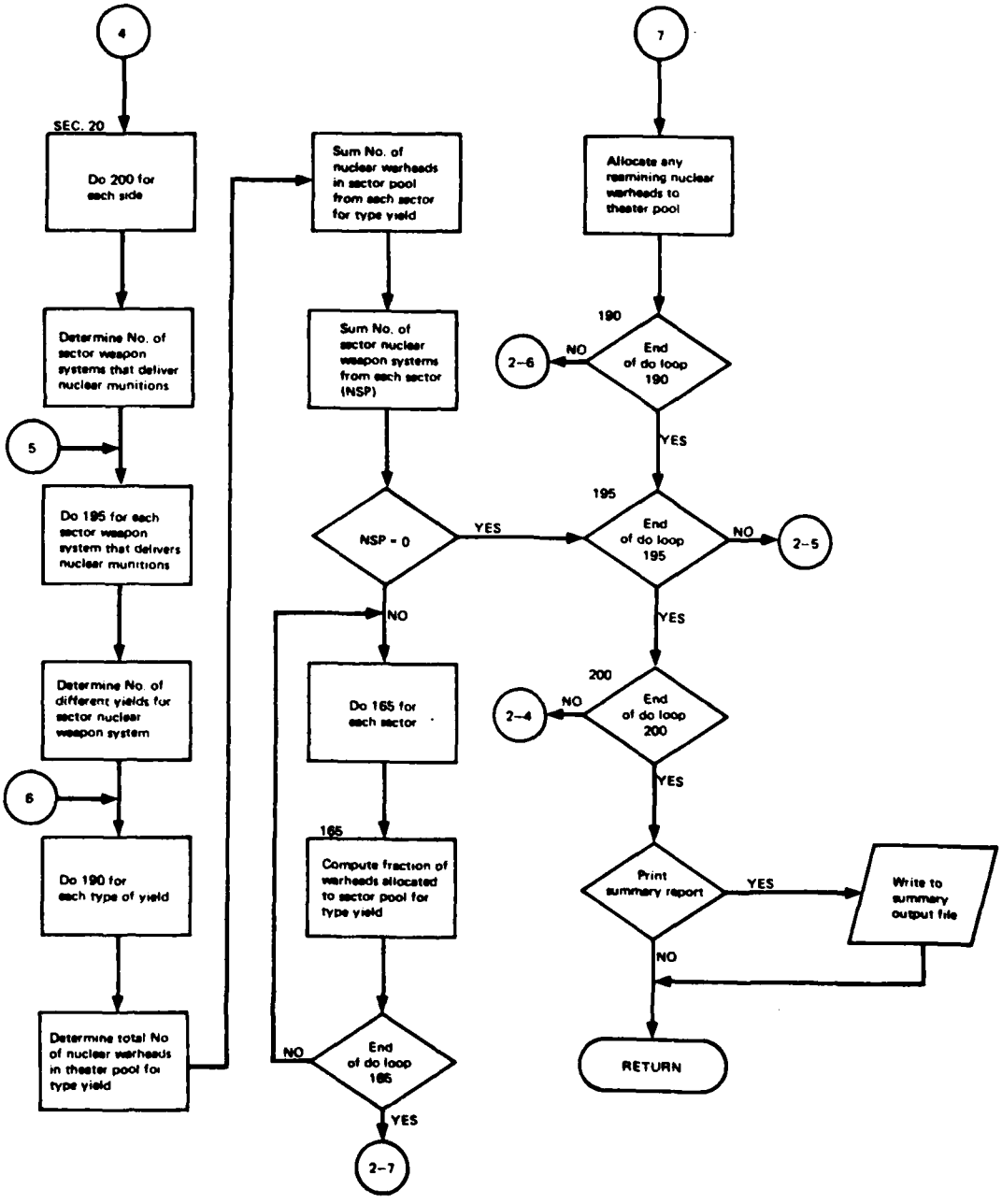


Figure 57. Flowchart of TACWAR Routine WHINUP (Part 2 of 2)

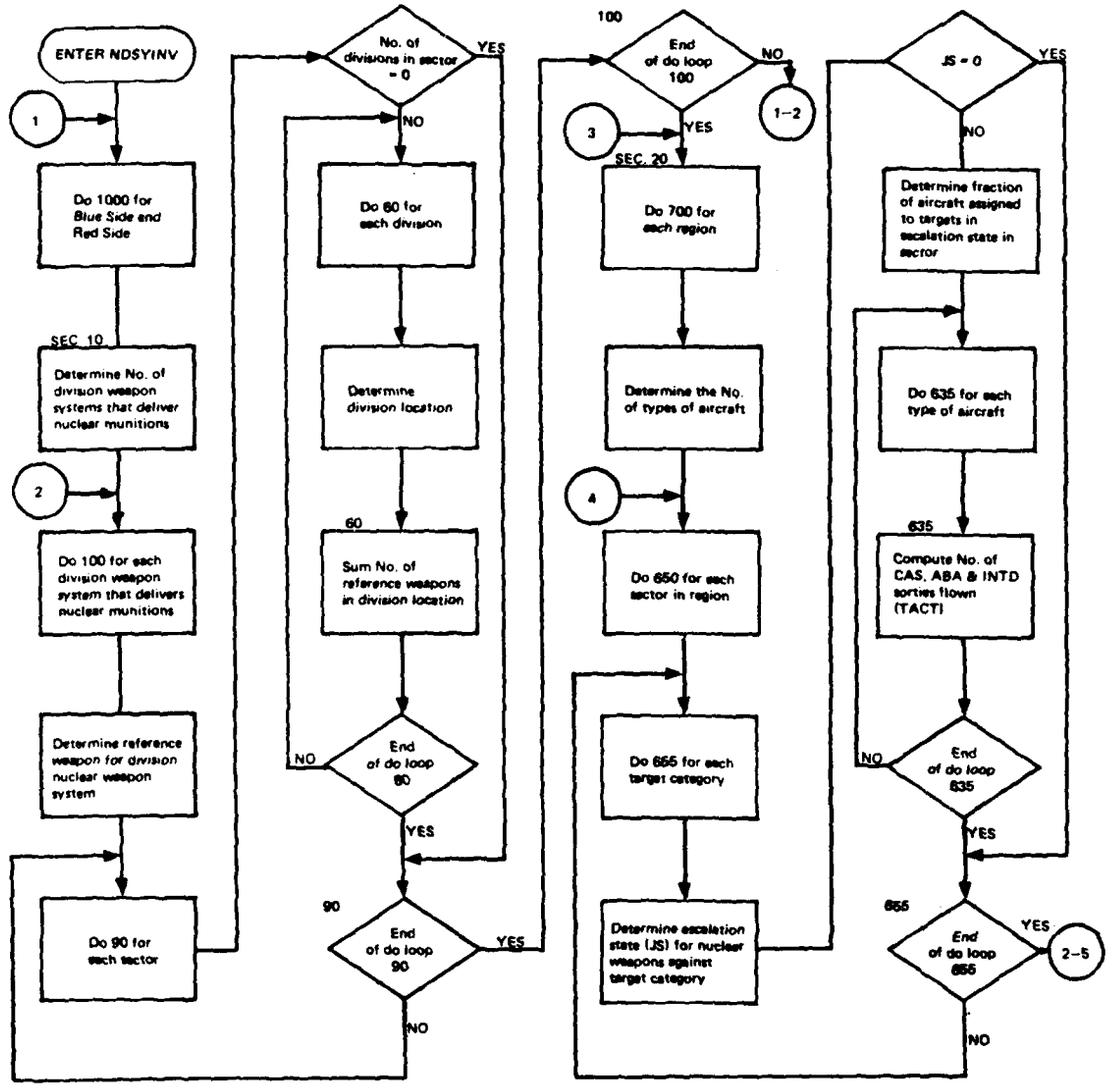


Figure 58. Flowchart of TACWAR Routine NDSYINV (Part 1 of 3)

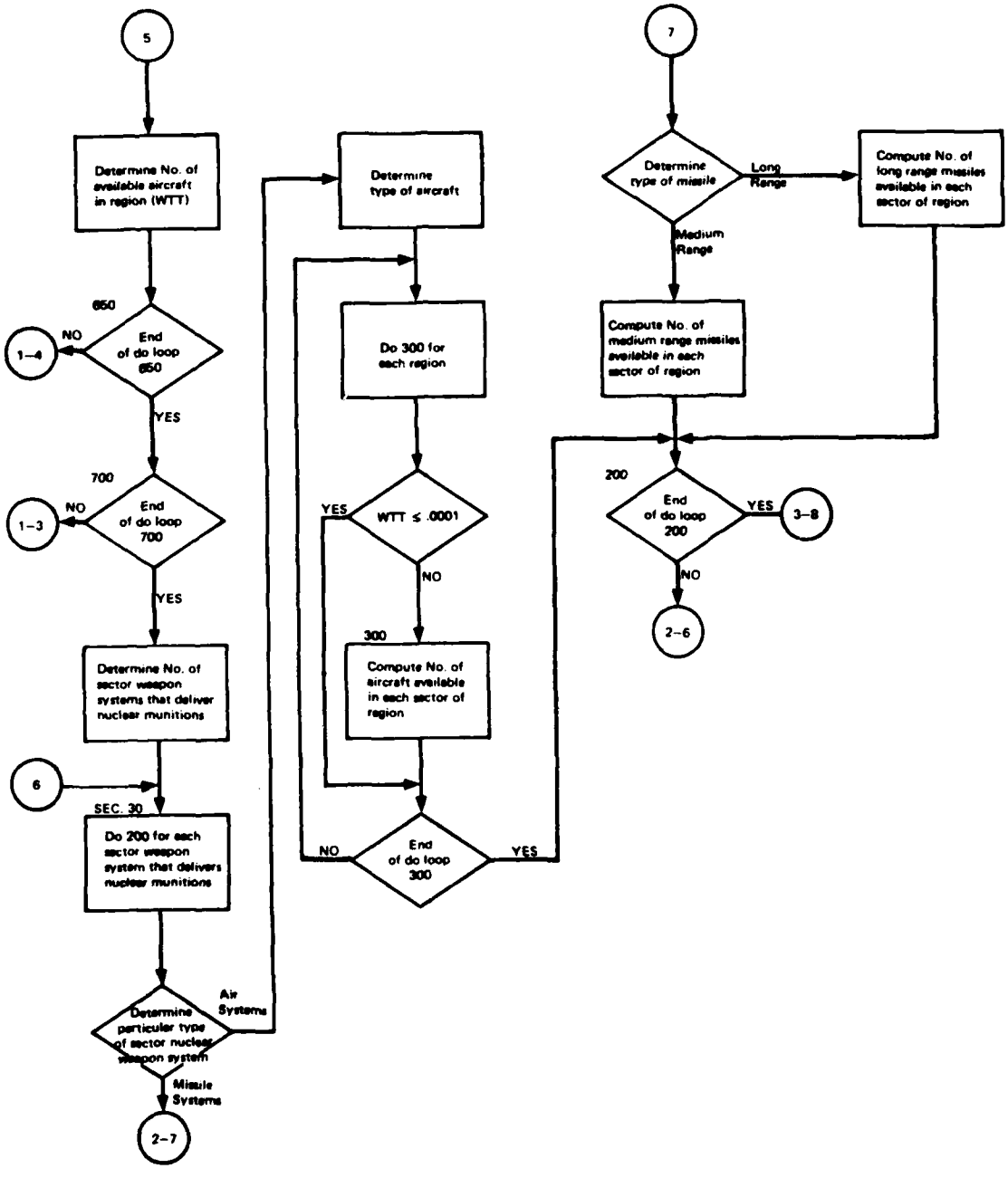


Figure 58. Flowchart of TACWAR Routine NDSYINV (Part 2 of 3)

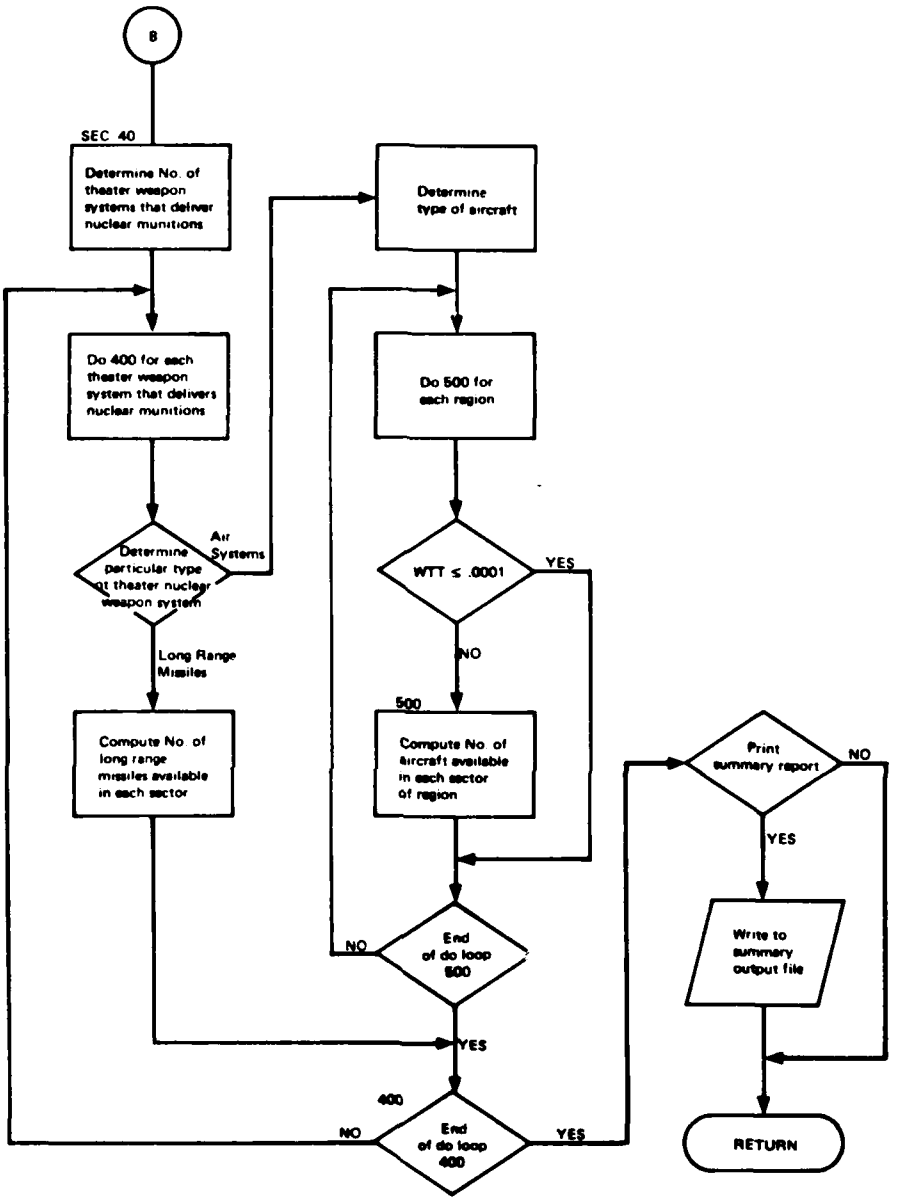


Figure 58. Flowchart of TACWAR Routine NDSYINV (Part 3 of 3)

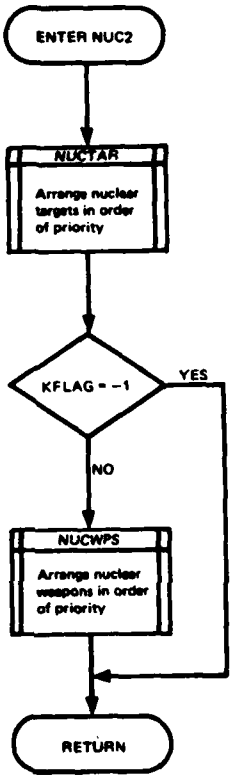


Figure 59. Flowchart of TACWAR Routine NUC2

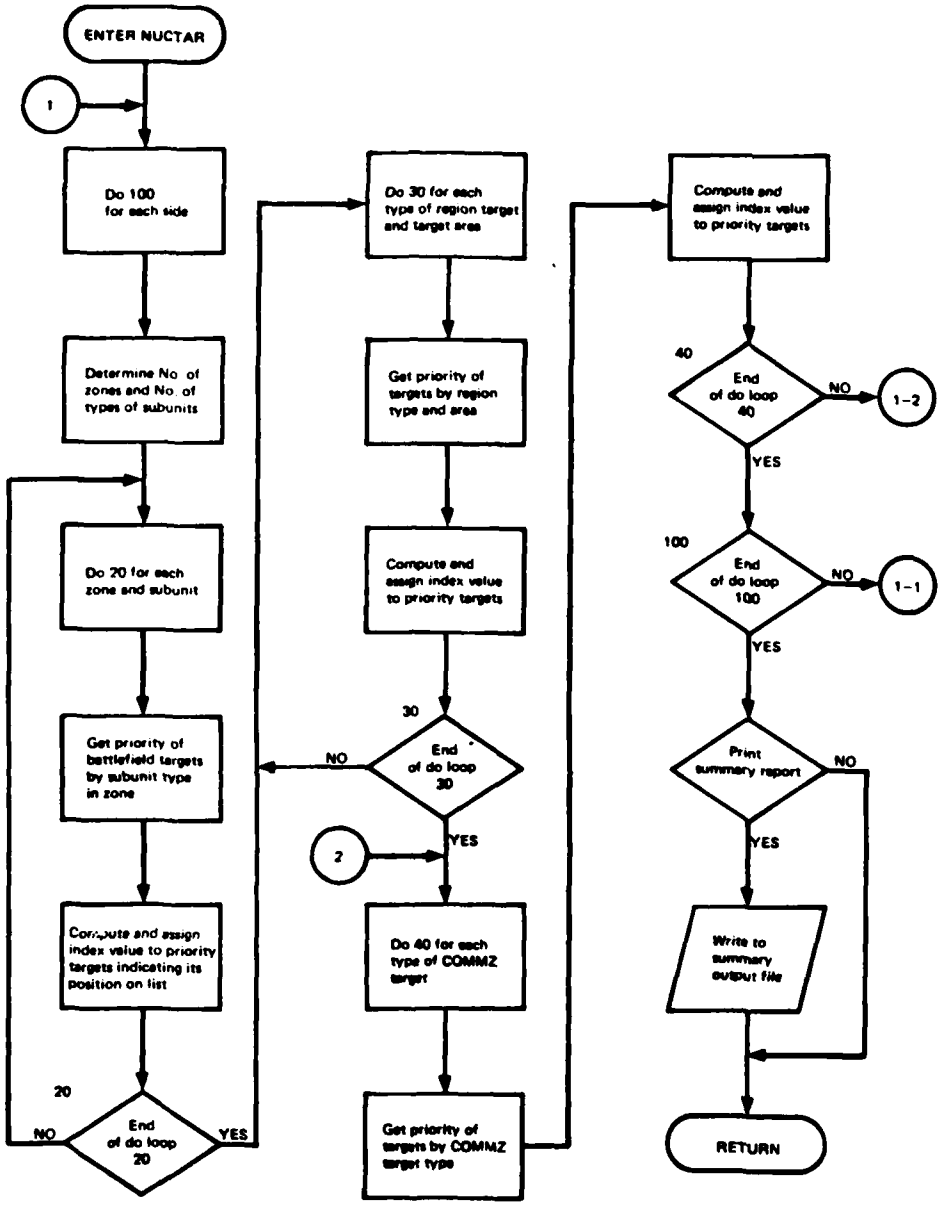


Figure 60. Flowchart of TACWAR Routine NUCTAR

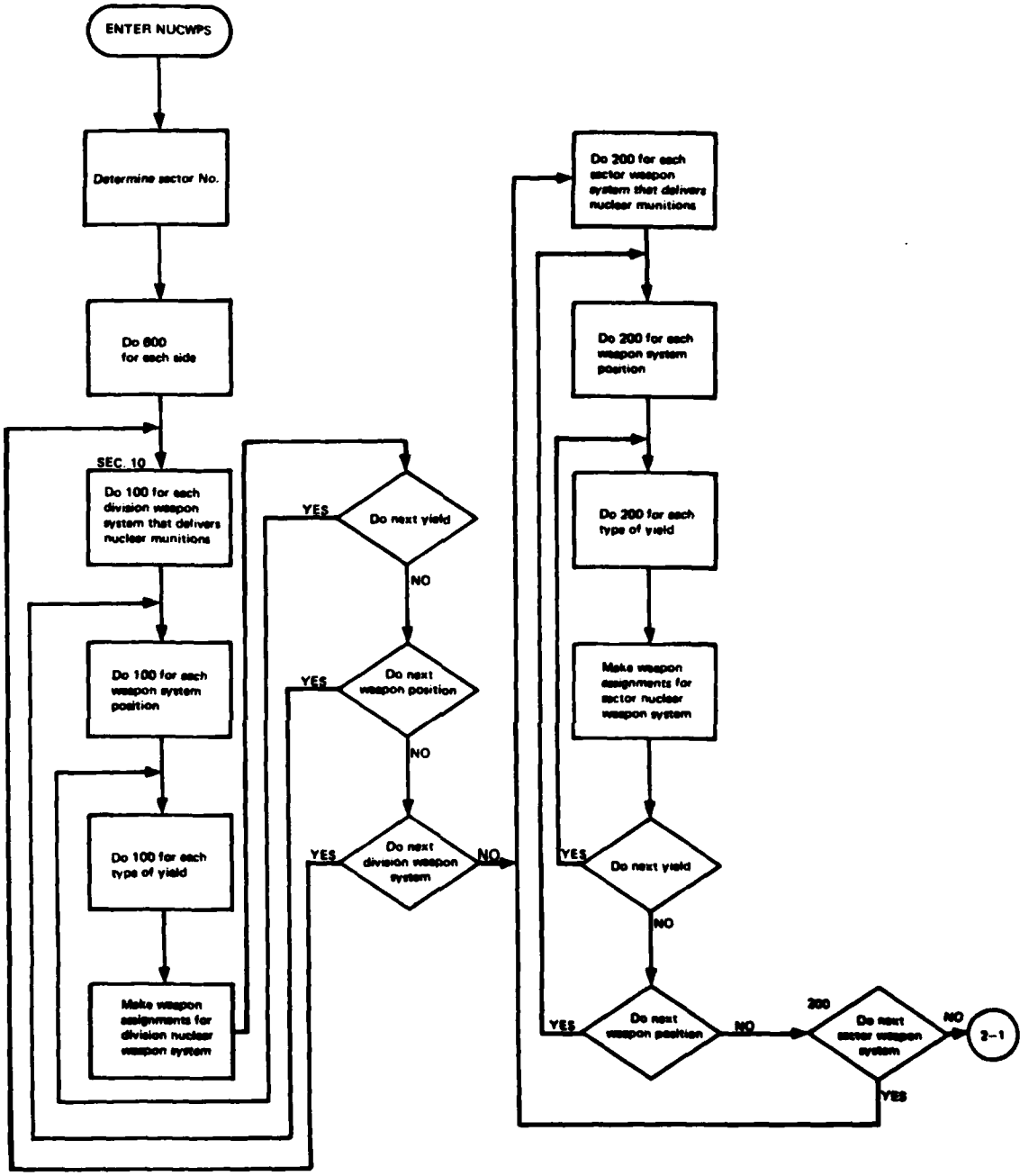


Figure 61. Flowchart of TACWAR Routine NUCWPS (Part 1 of 2)

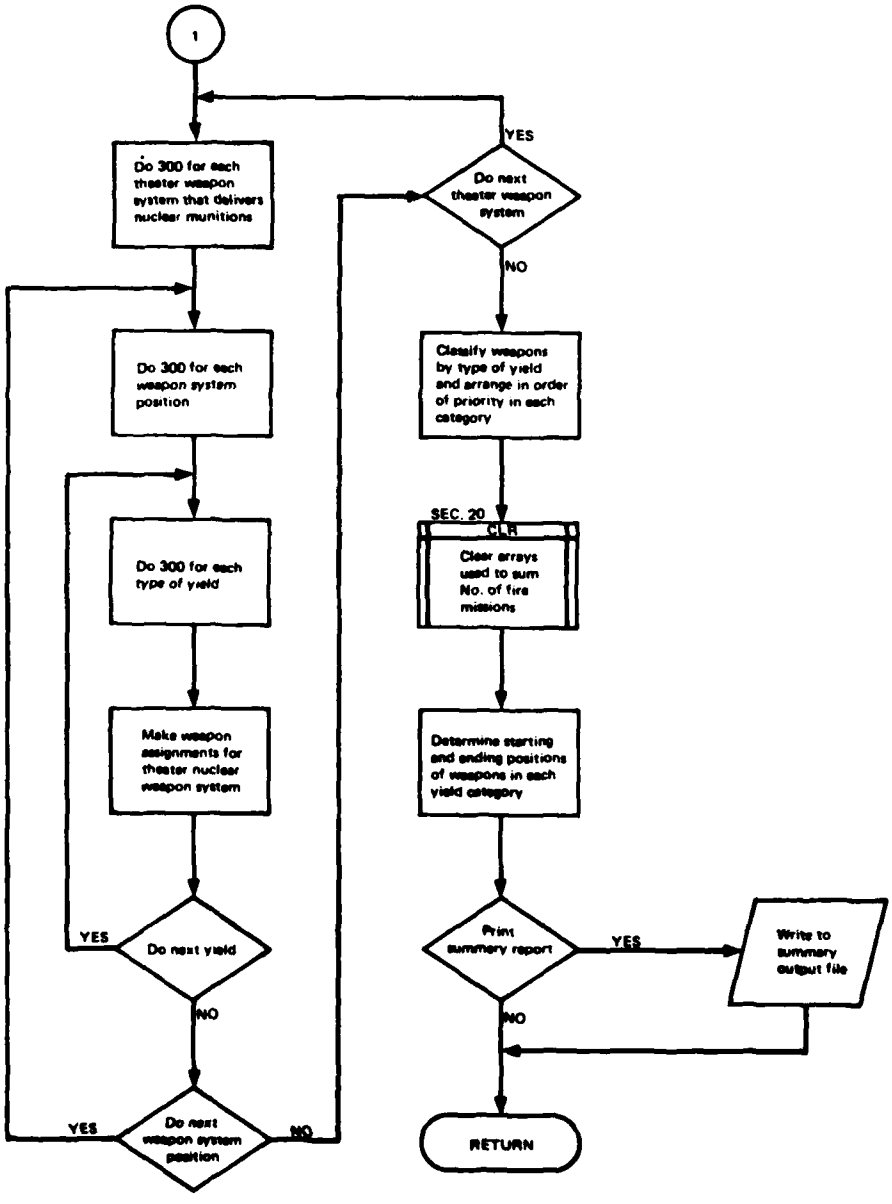


Figure 61. Flowchart of TACWAR Routine NUCWPS (Part 2 of 2)

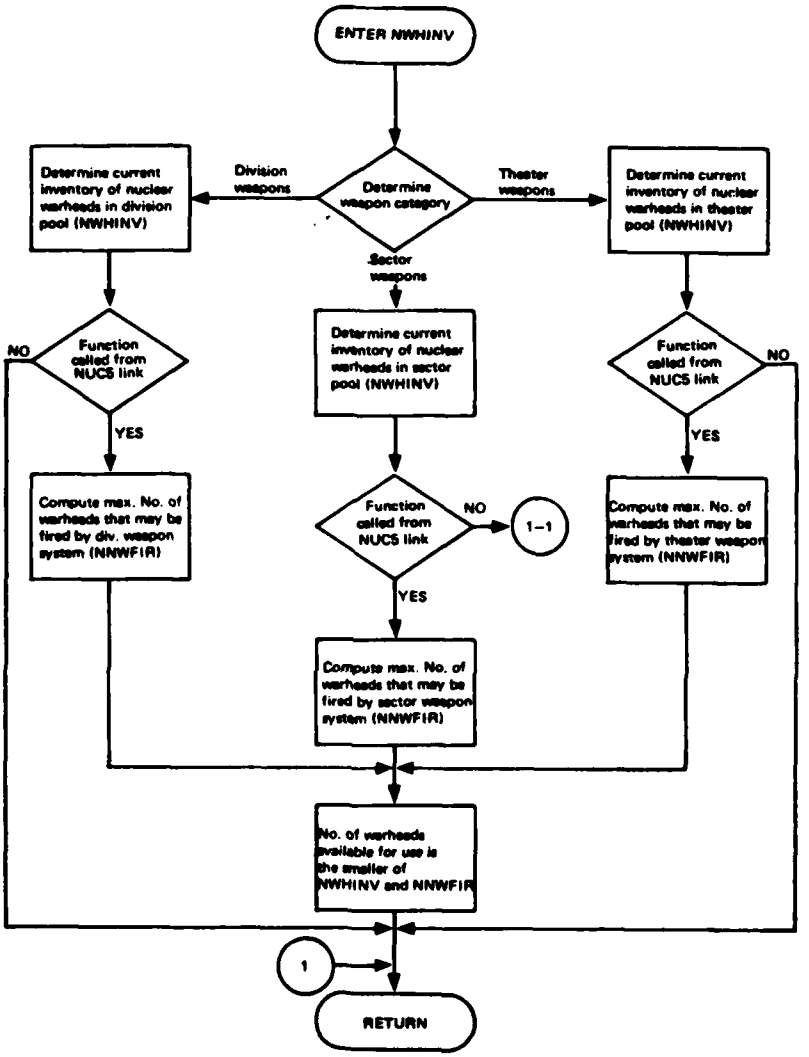


Figure 62. Flowchart of TACWAR Routine NWHINV

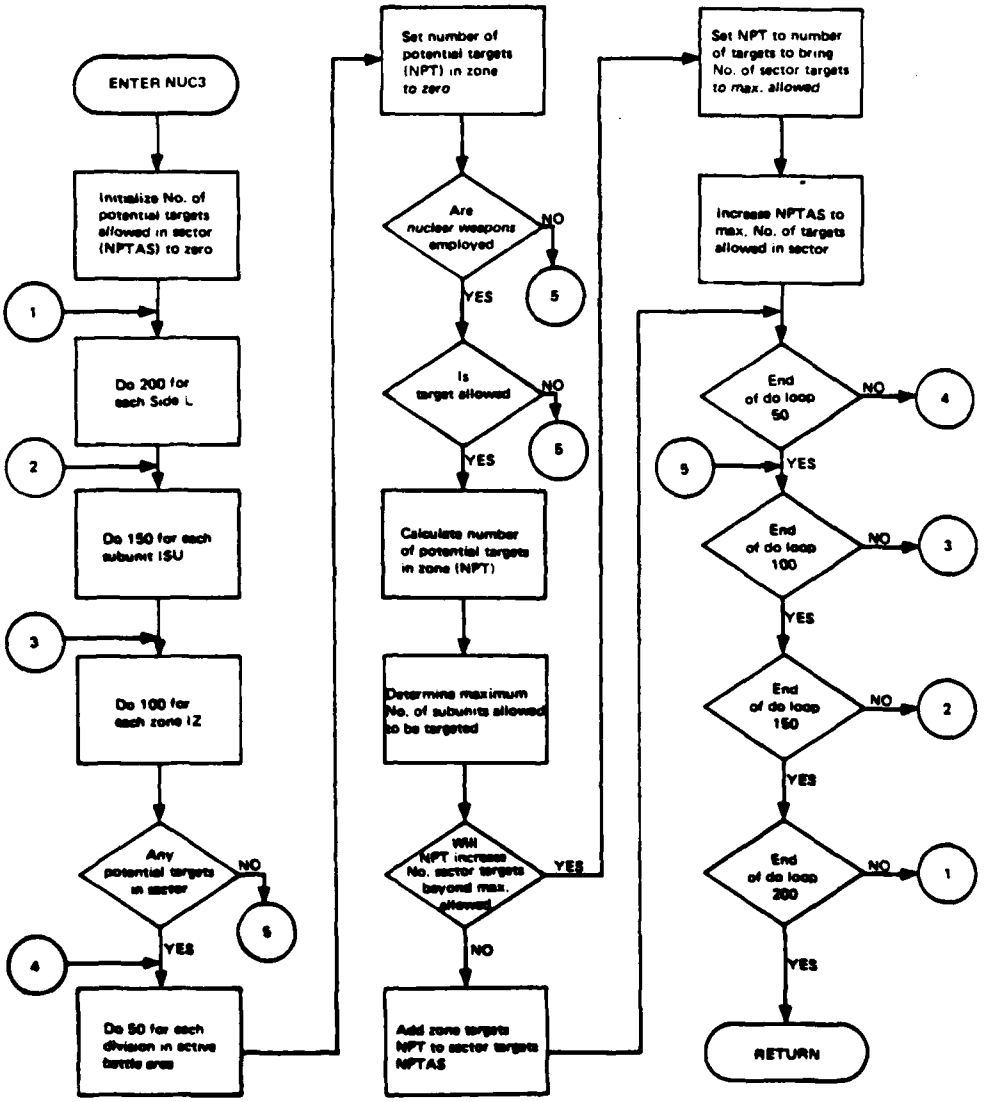


Figure 63. Flowchart of TACWAR Routine NUC3

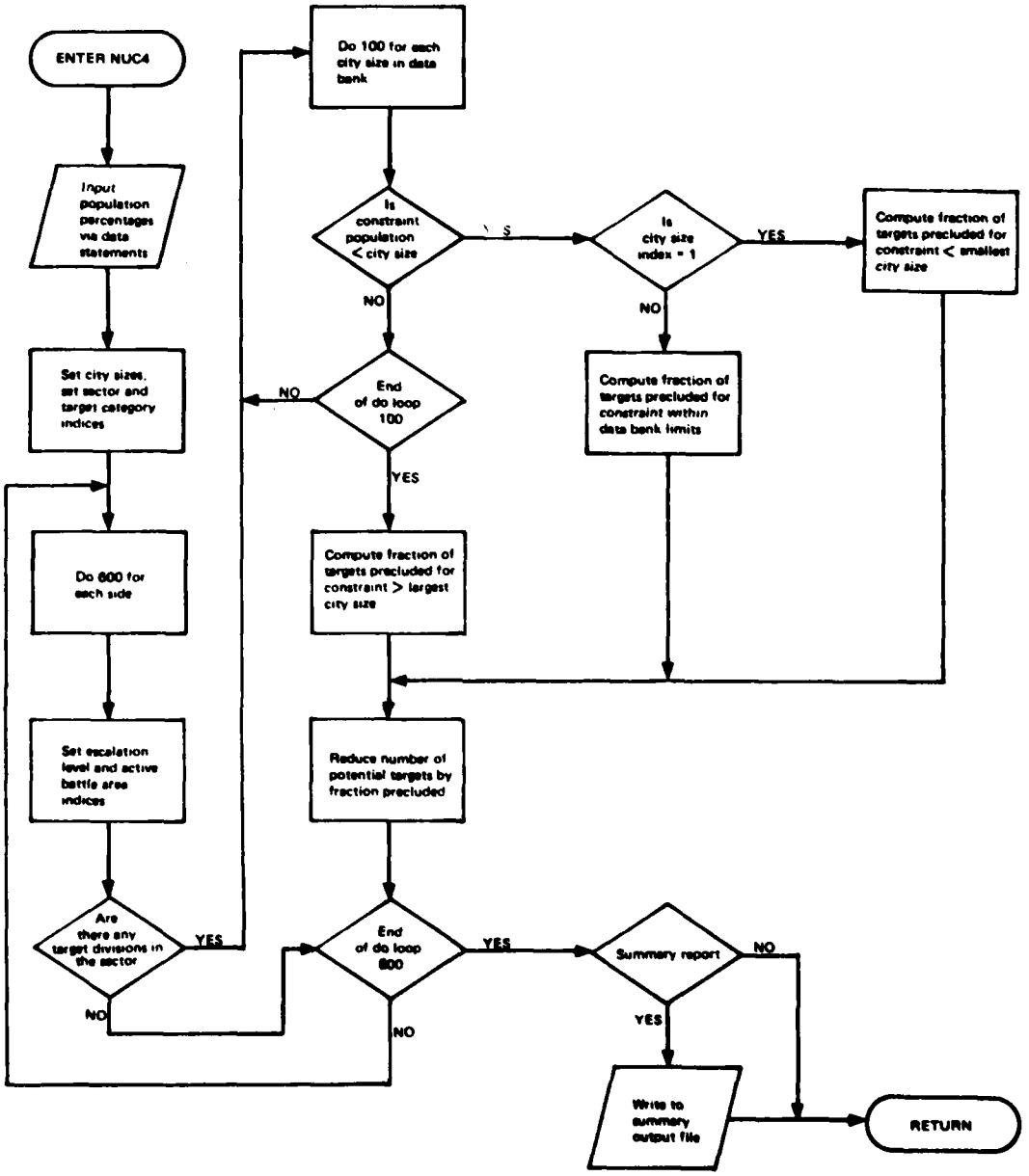


Figure 64. Flowchart of TACWAR Routine NUC4

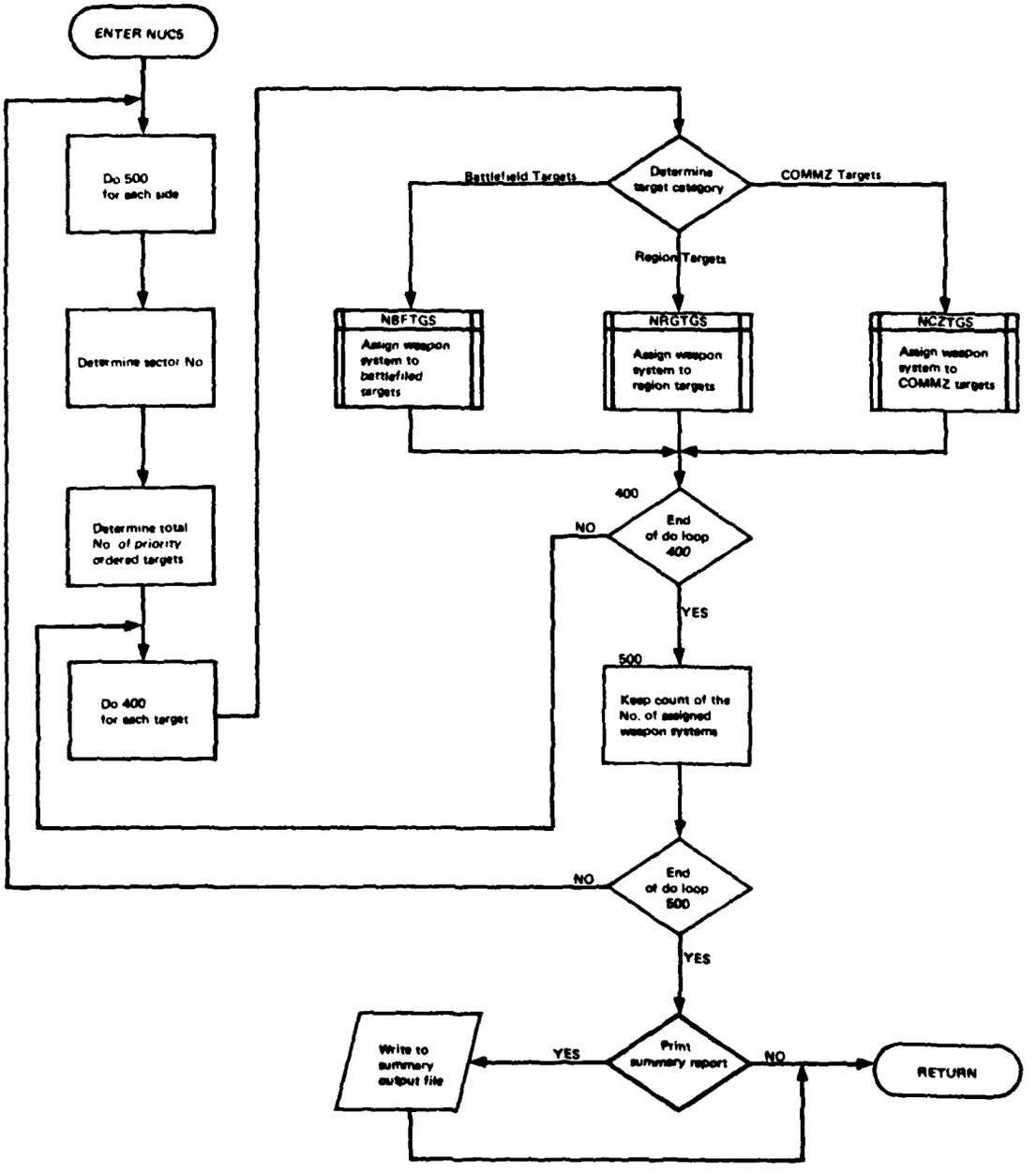


Figure 65. Flowchart of TACWAR Routine NUC5

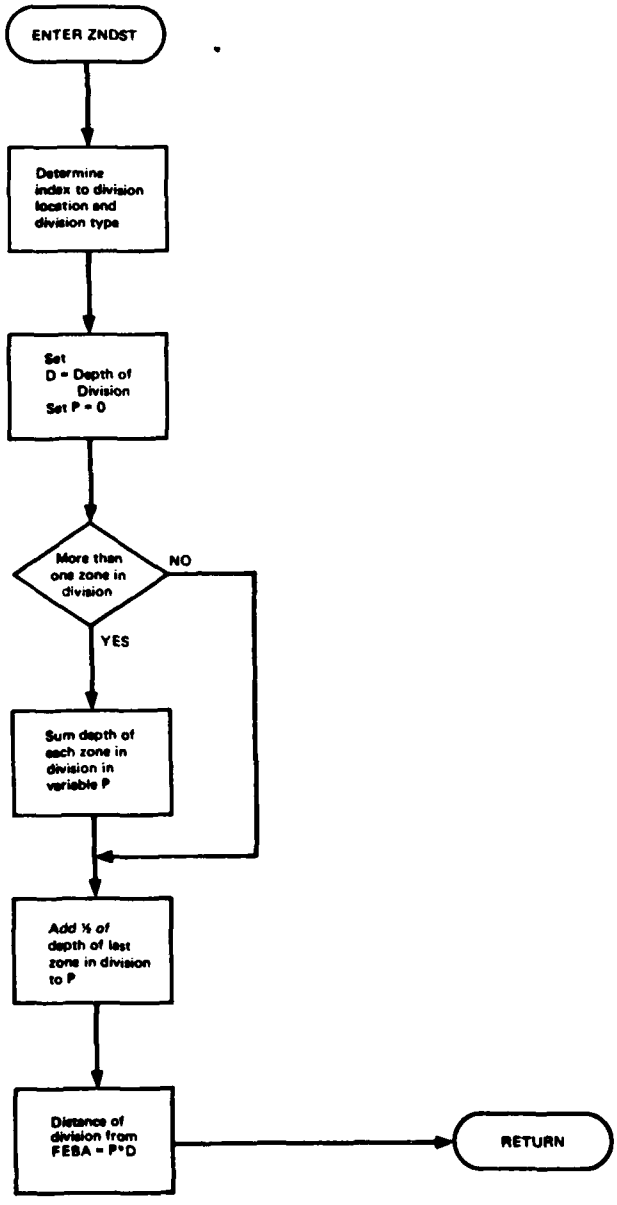


Figure 66. Flowchart of TACWAR Routine ZNDST

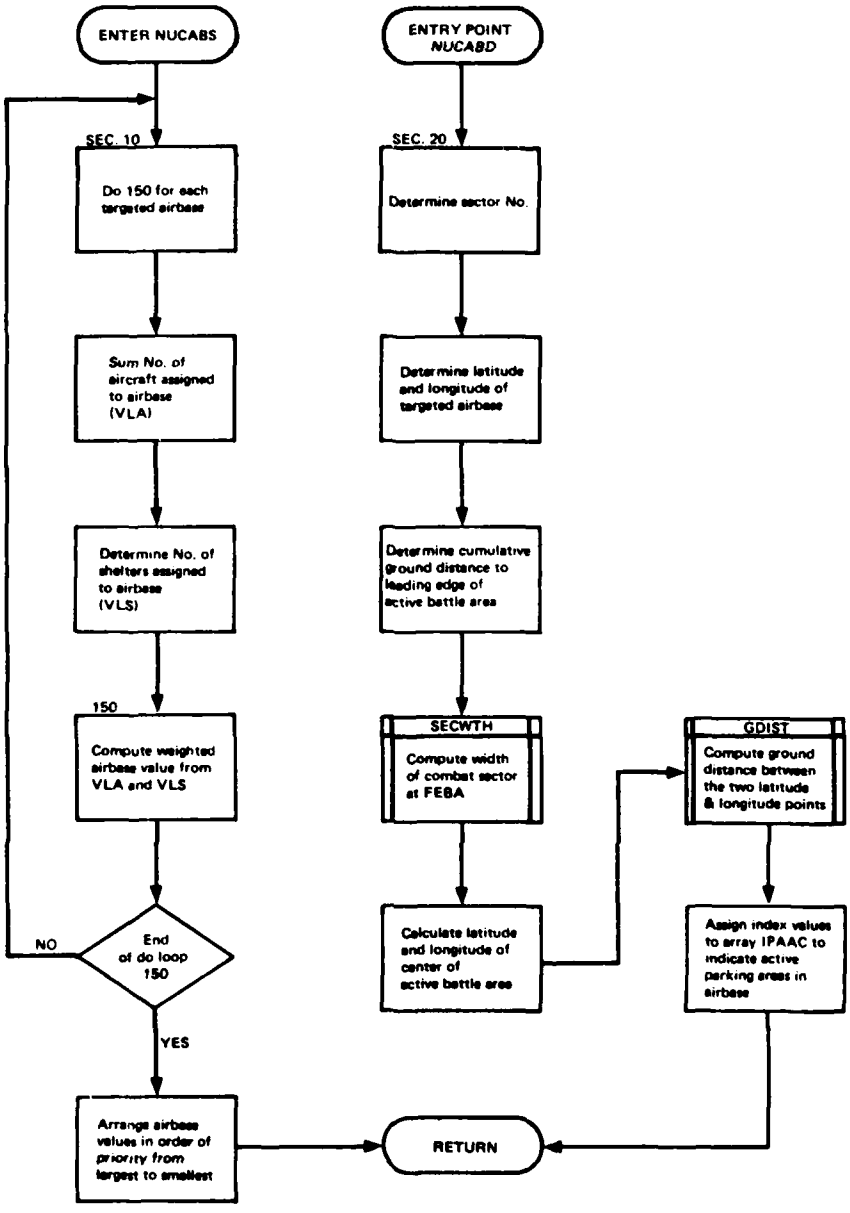


Figure 67. Flowchart of TACWAR Routine NUCABS

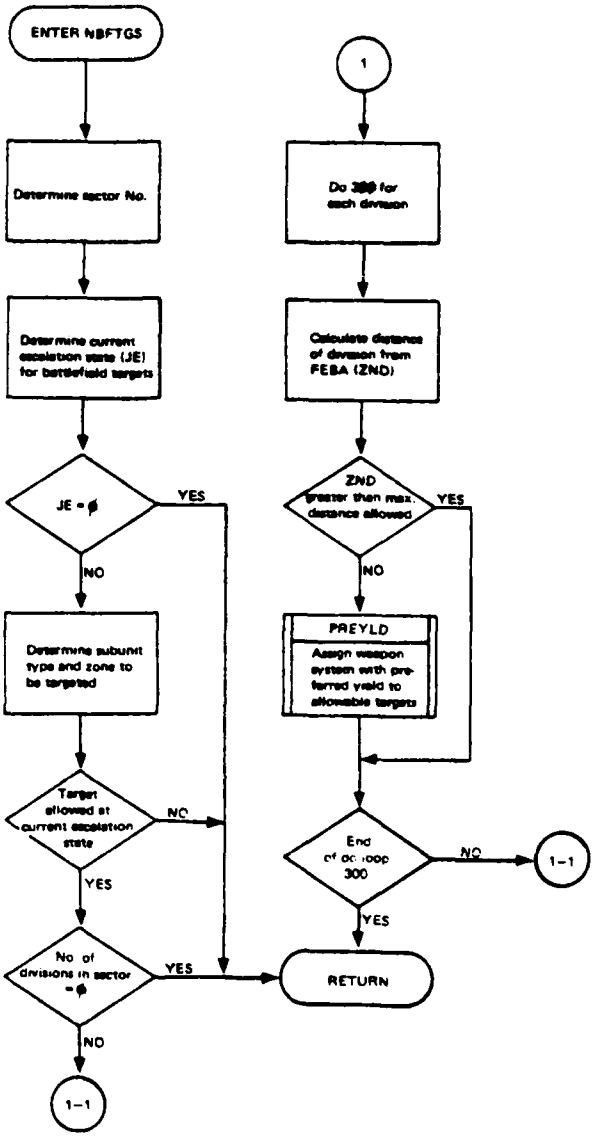
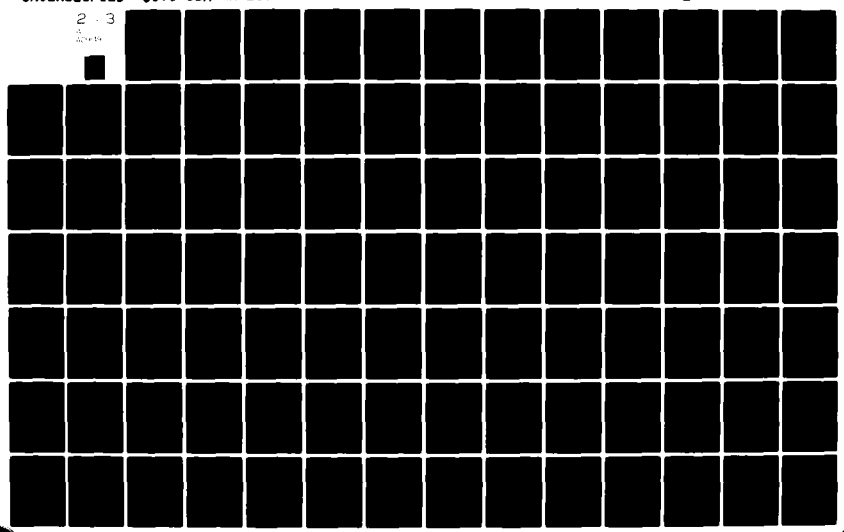
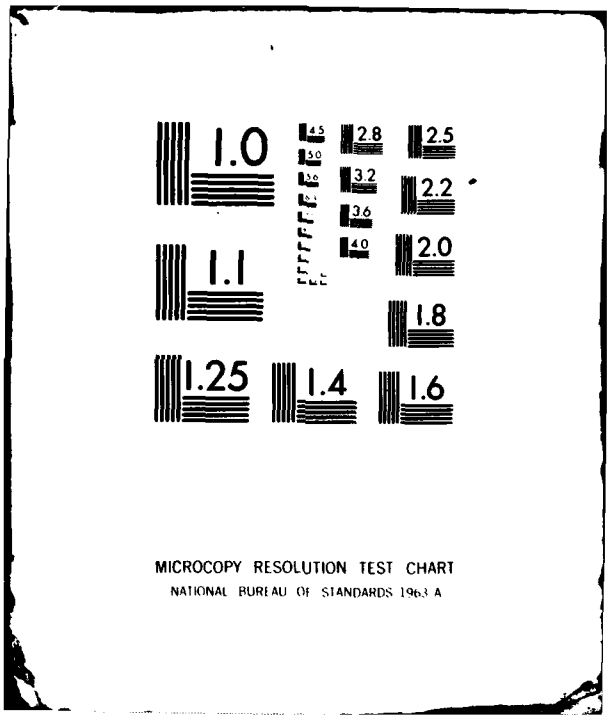


Figure 68. Flowchart of TACWAR Routine NBFTGS

AD-A091 492 COMMAND AND CONTROL TECHNICAL CENTER WASHINGTON DC F/G 9/2
INSTITUTE FOR DEFENSE ANALYSES TACTICAL WARFARE (TACWAR) MODEL.--ETC(U)
SEP 77 M C FLYTHE, P FINNEGAN, J REIERSON
UNCLASSIFIED CCTC-CSM-MM-237-77-PT-2 NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

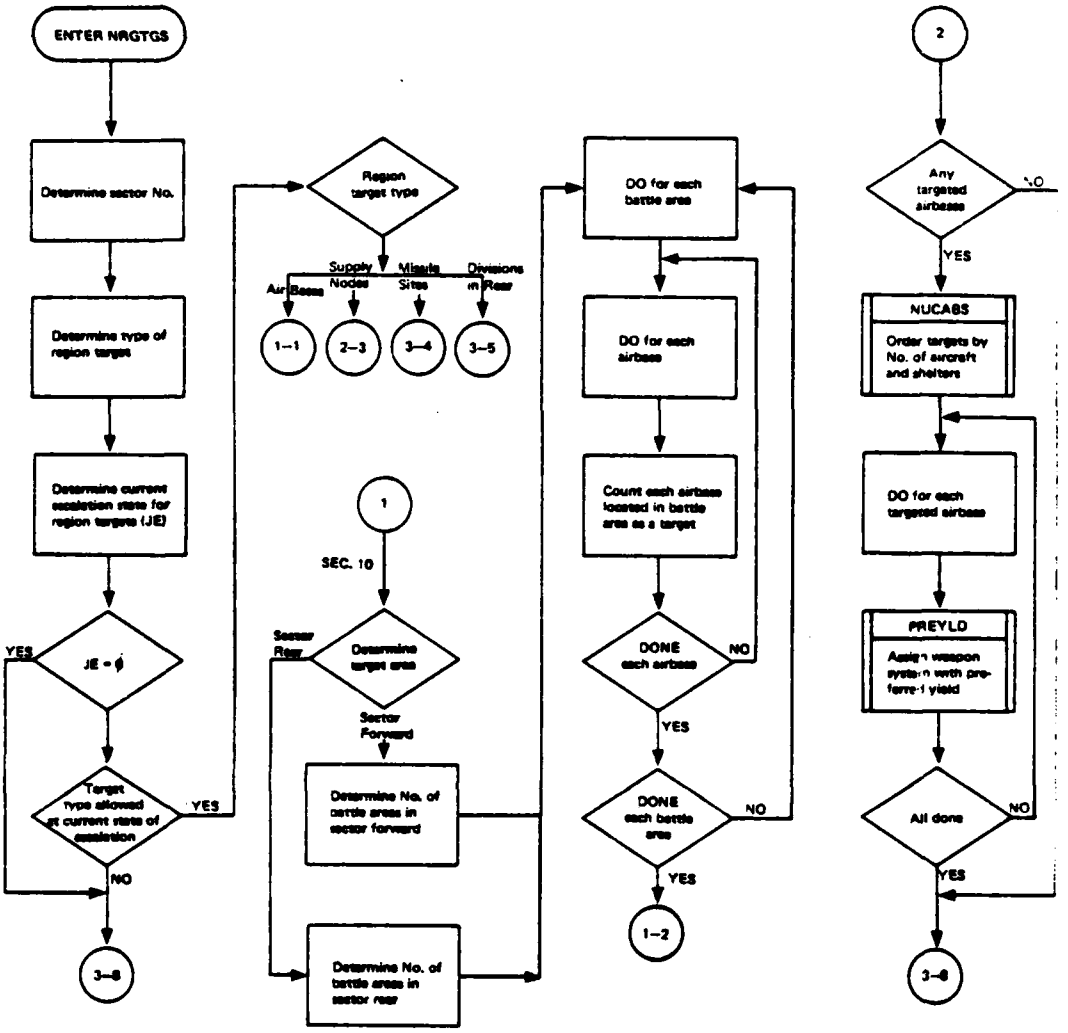


Figure 69. Flowchart of TACWAR Routine NRGTGS (Part 1 of 3)

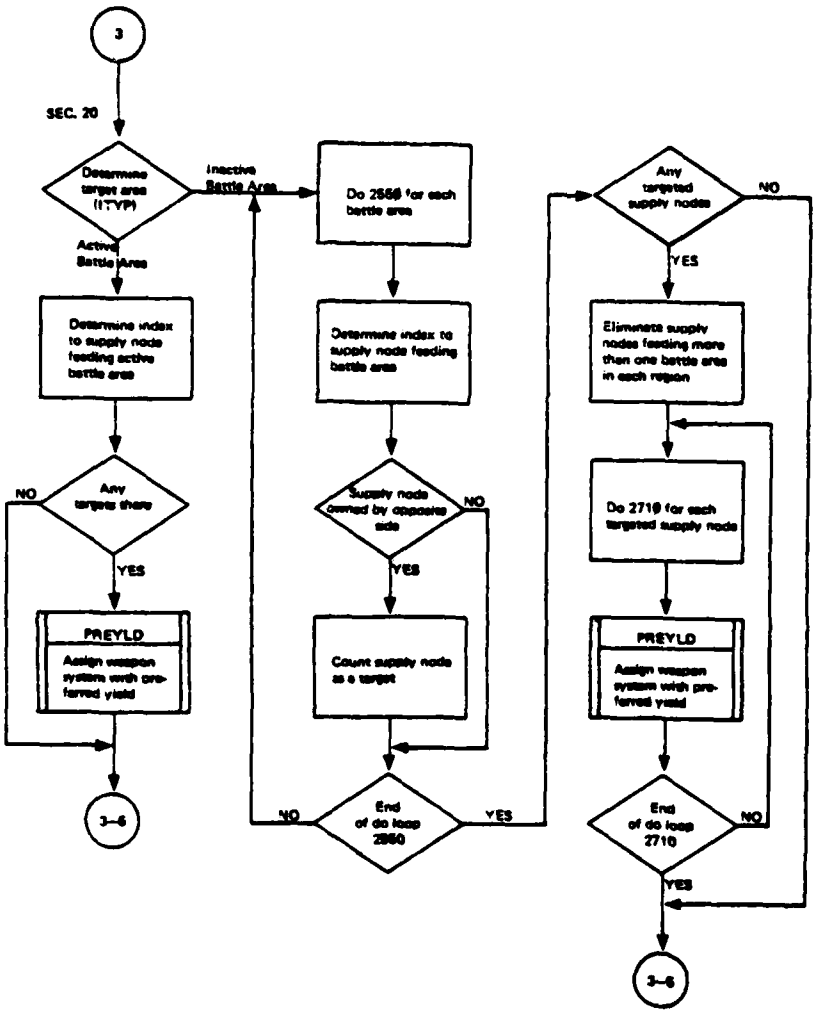


Figure 69. Flowchart of TACWAR Routine NRGTGS (Part 2 of 3)

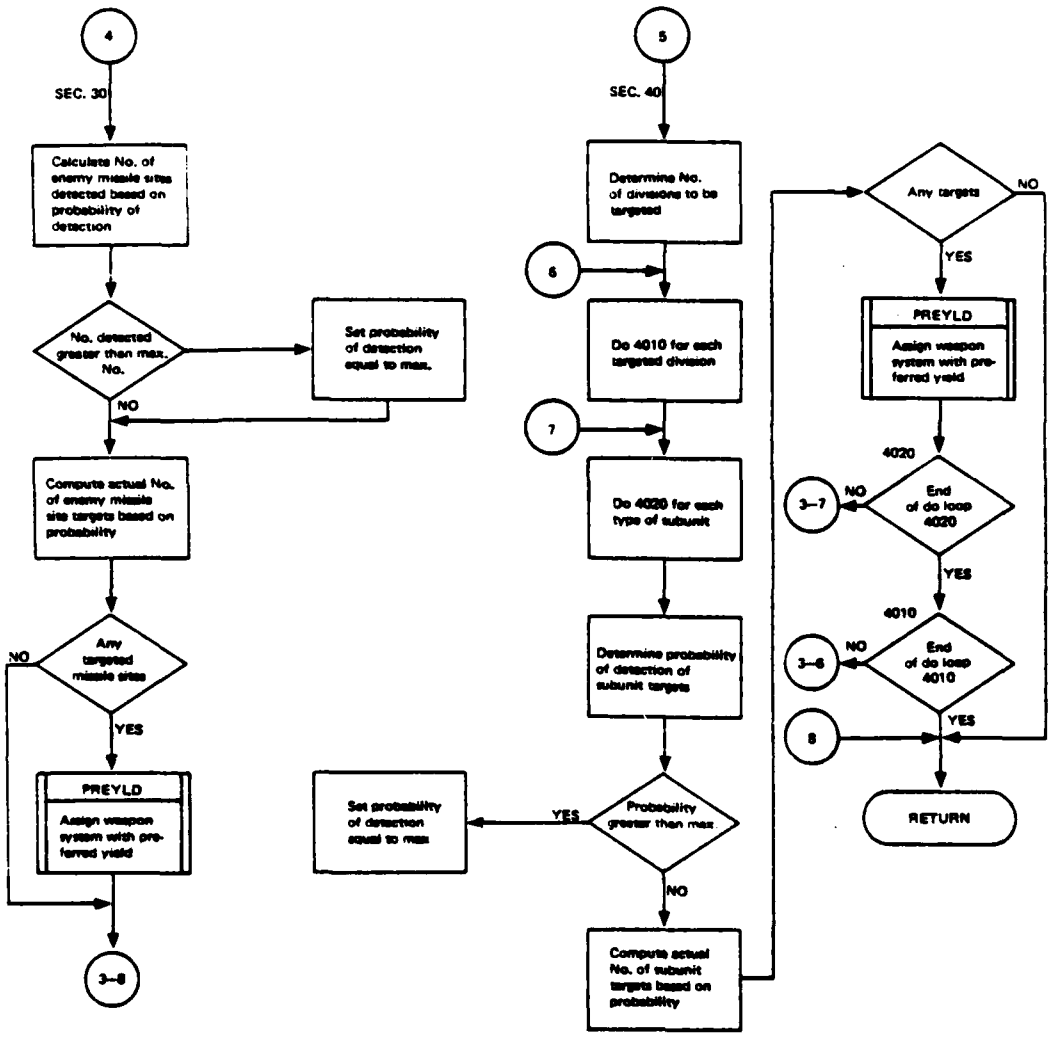


Figure 69. Flowchart of TACWAR Routine NRGTGS (Part 3 of 3)

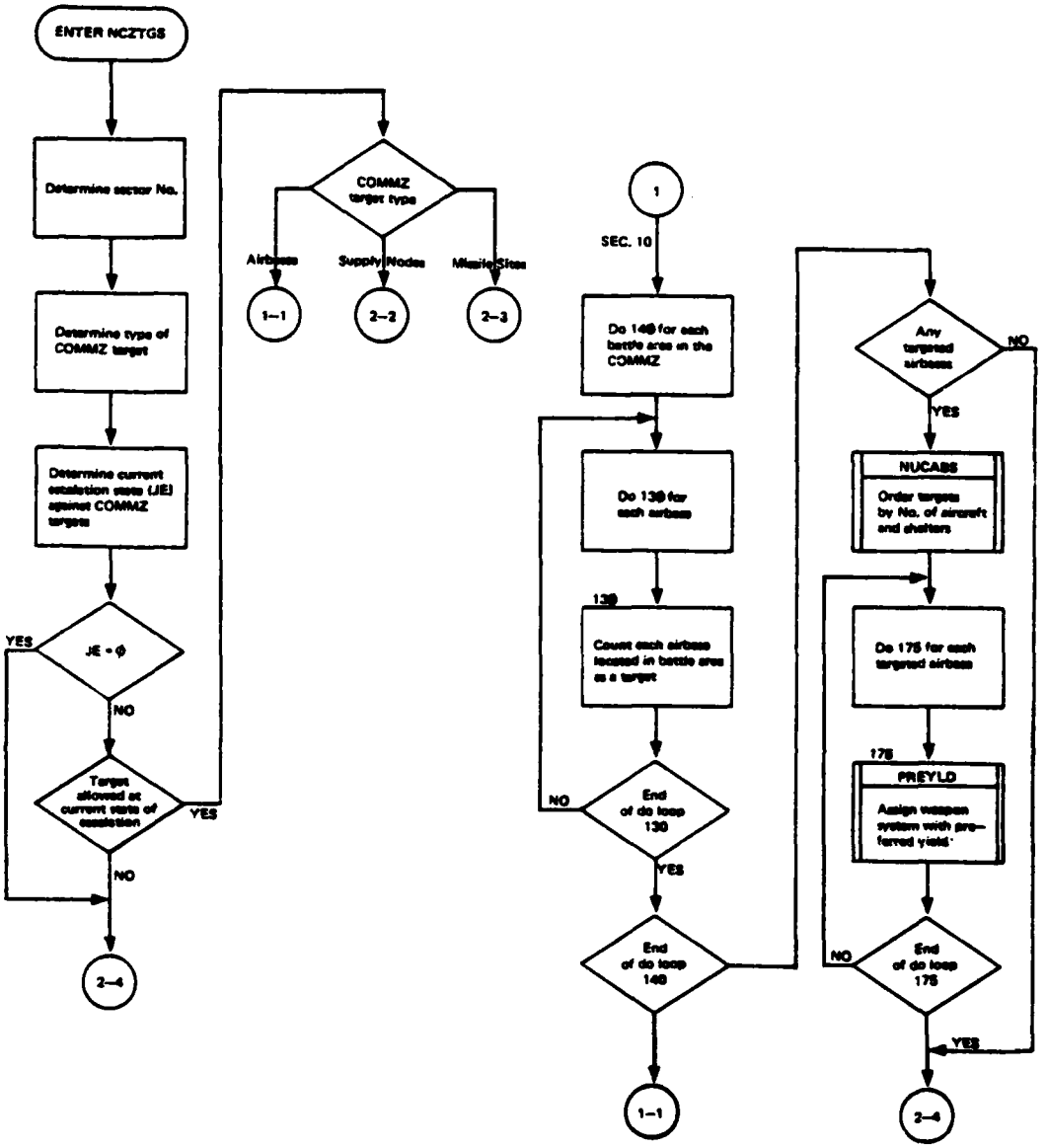


Figure 70. Flowchart of TACWAR Routine NCZTGS (Part 1 of 2)

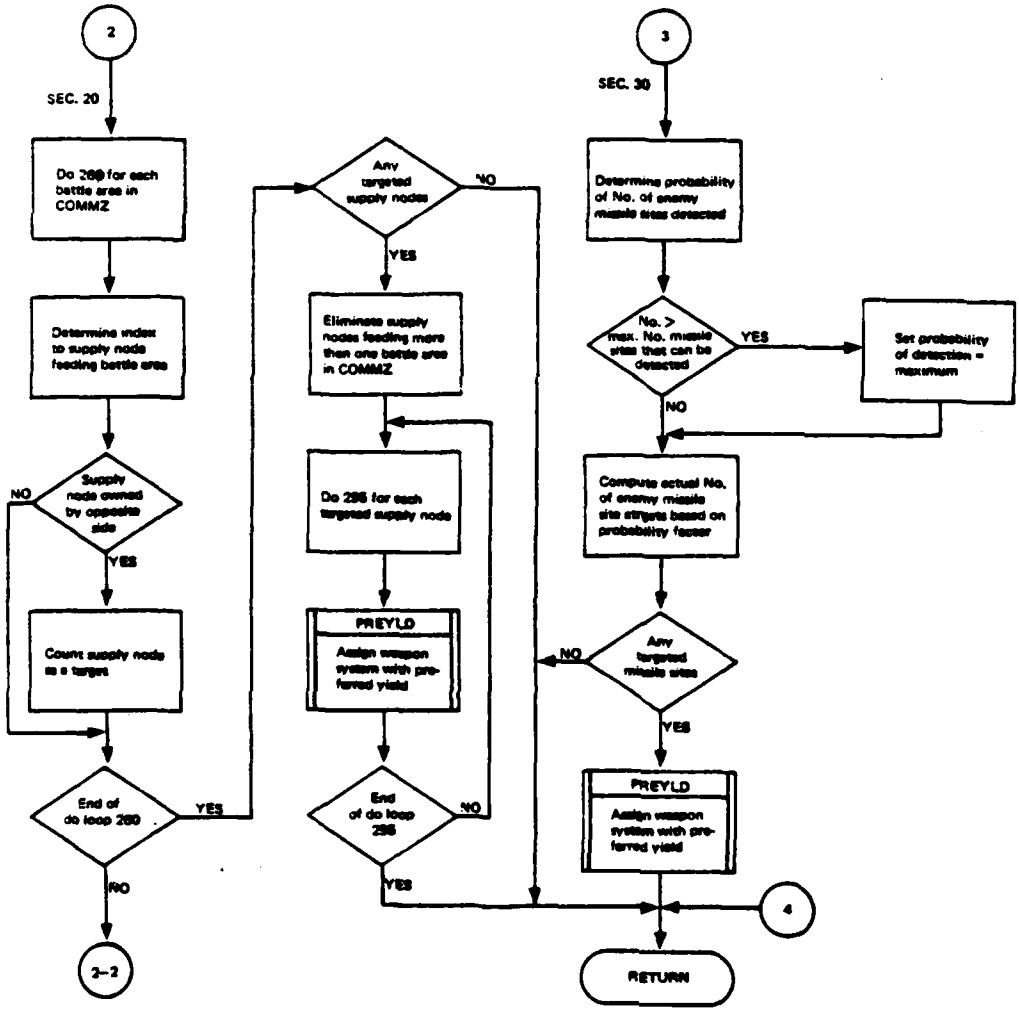


Figure 70. Flowchart of TACWAR Routine NCZTGS (Part 2 of 2)

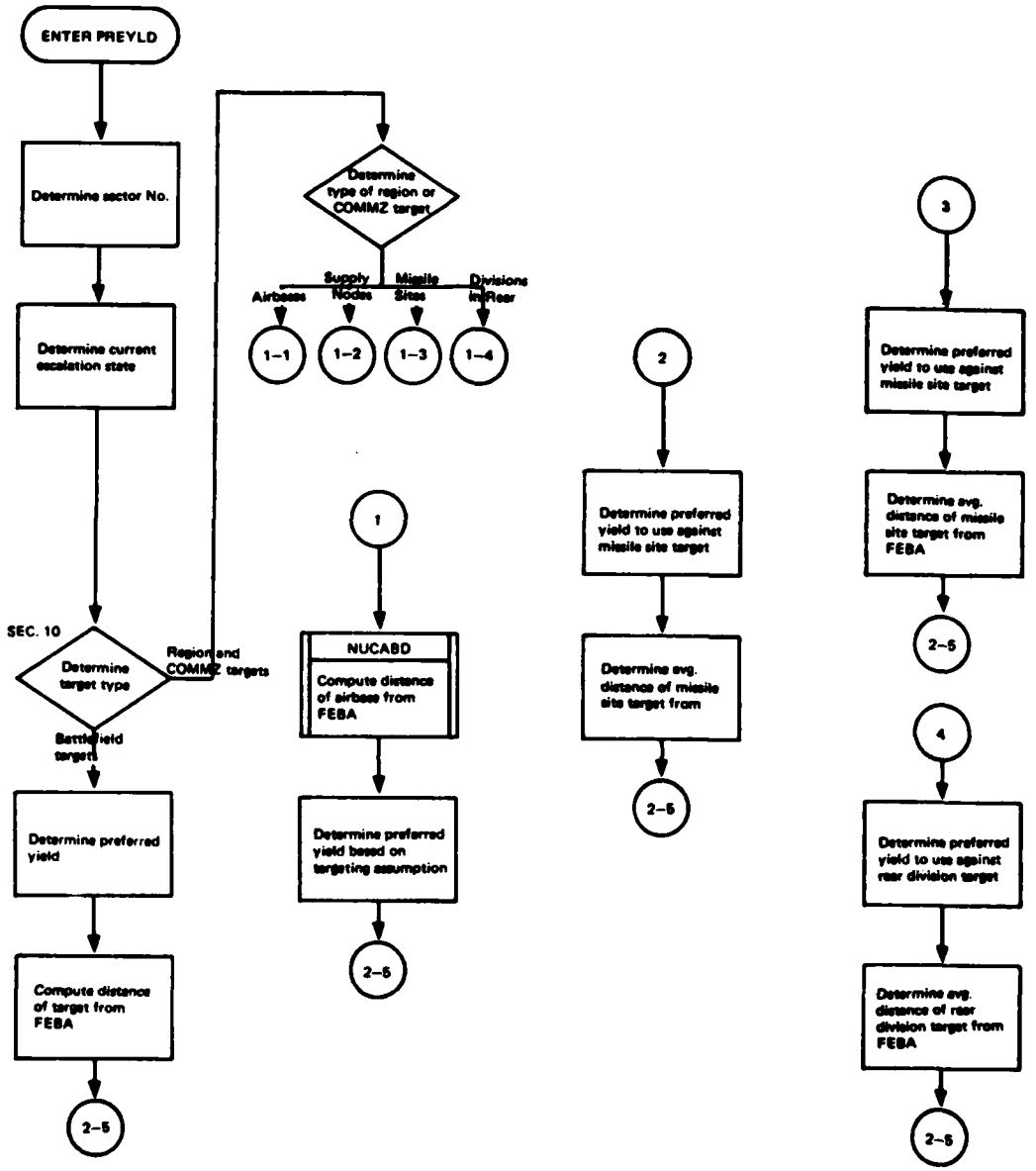


Figure 71. Flowchart of TACWAR Routine PREYLD (Part 1 of 2)

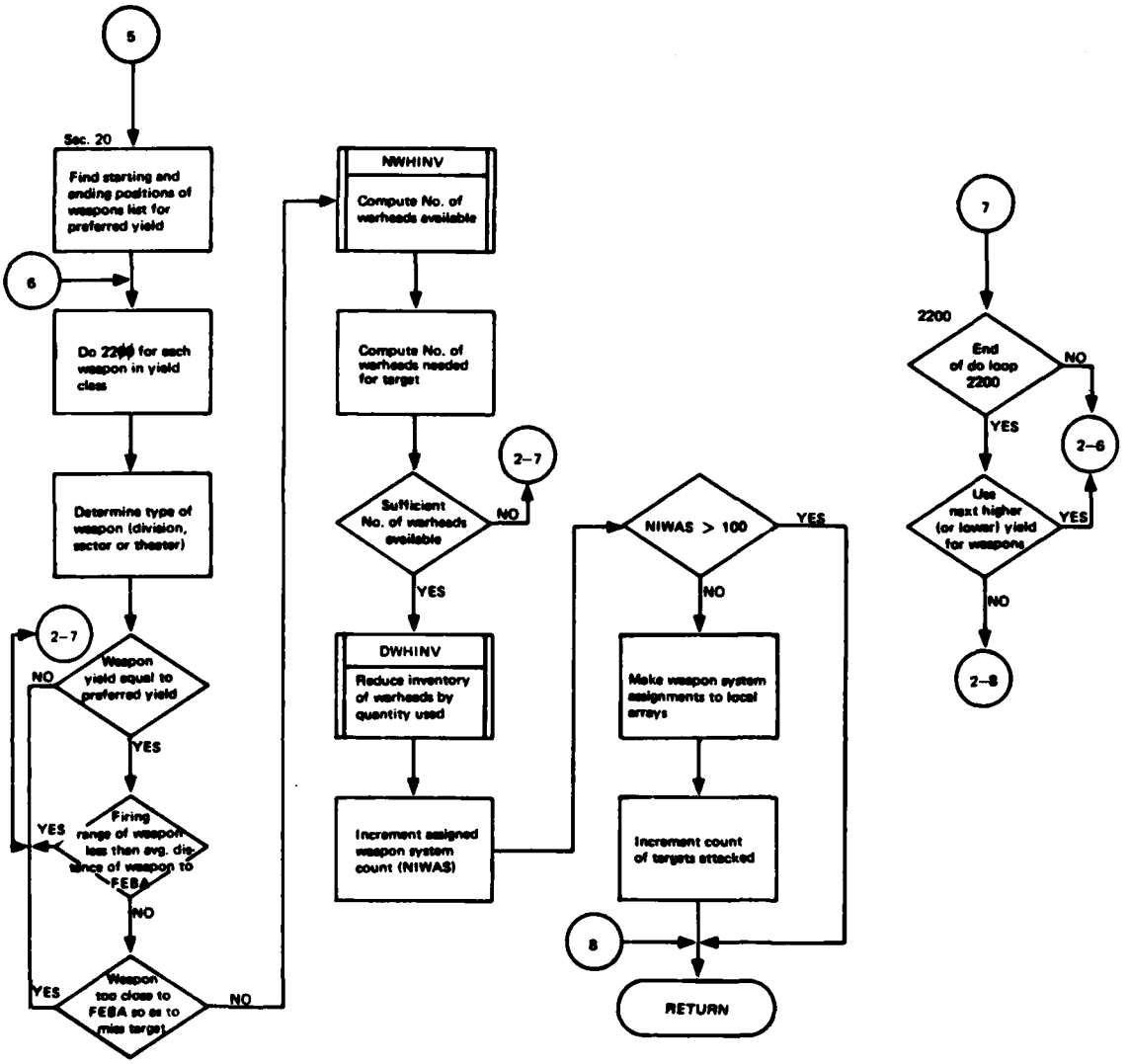


Figure 71. Flowchart of TACWAR Routine PREYLD (Part 2 of 2)

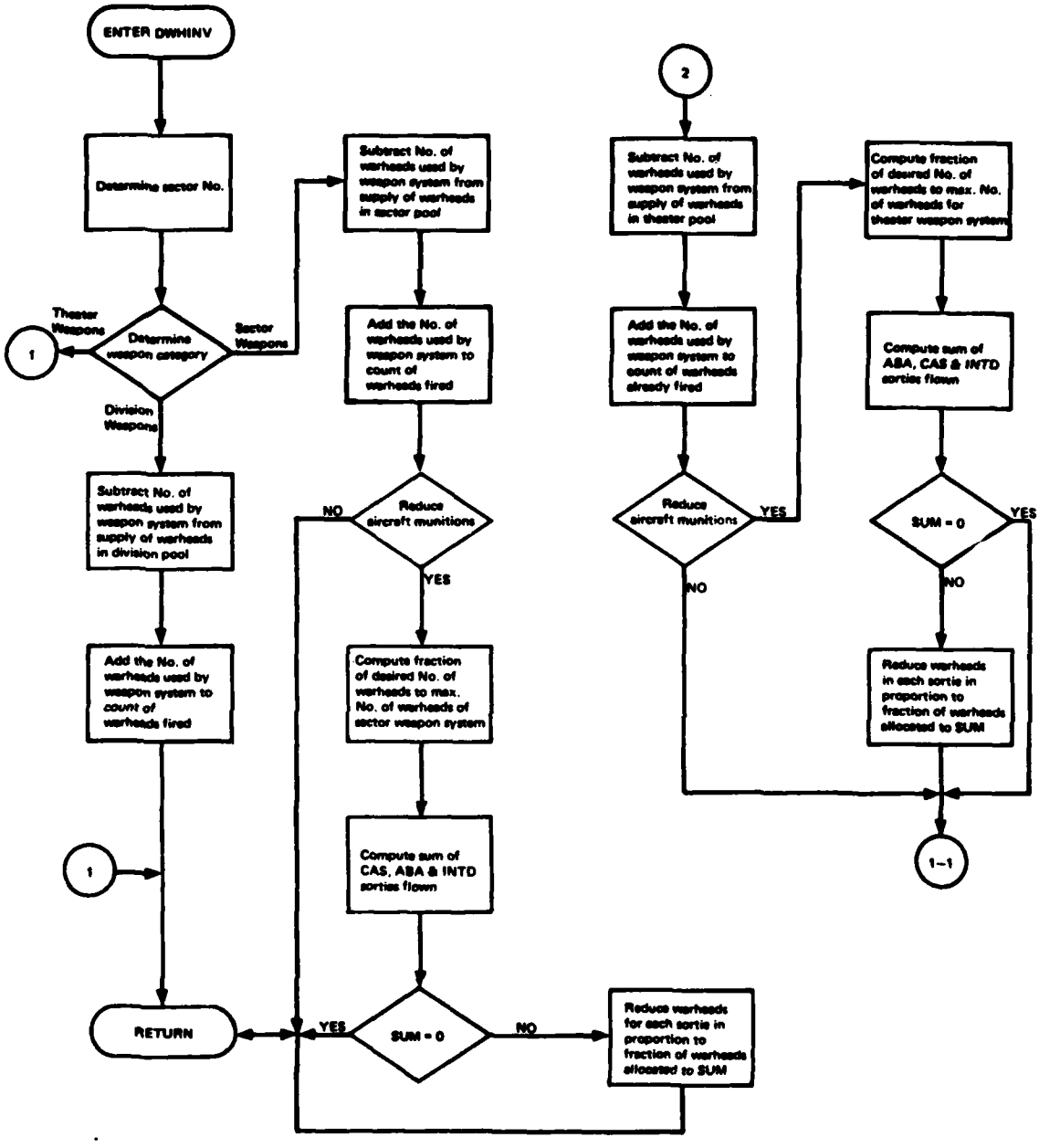


Figure 72. Flowchart of TACWAR Routine DWHINV

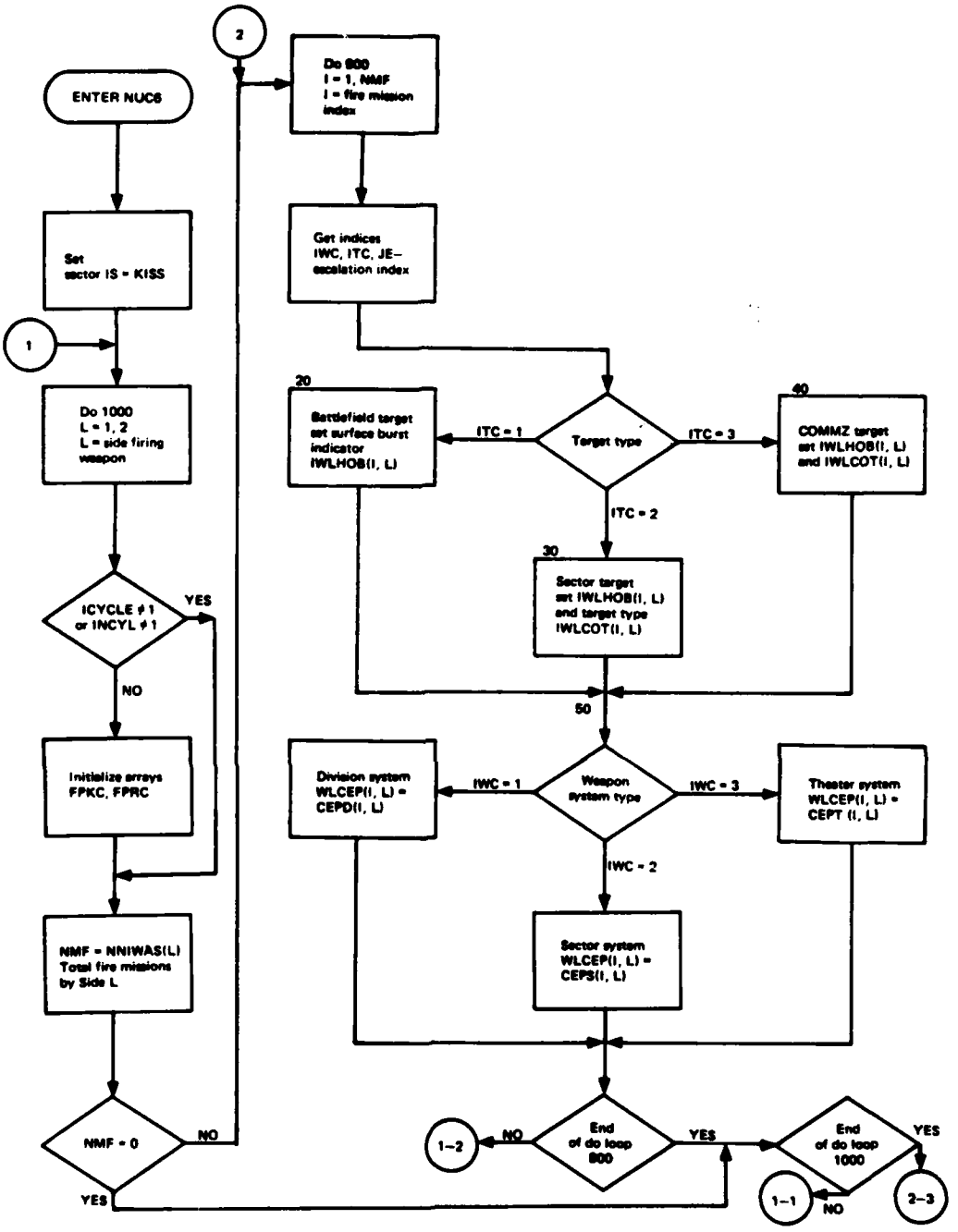


Figure 73. Flowchart of TACWAR Routine NUC6 (Part 1 of 2)

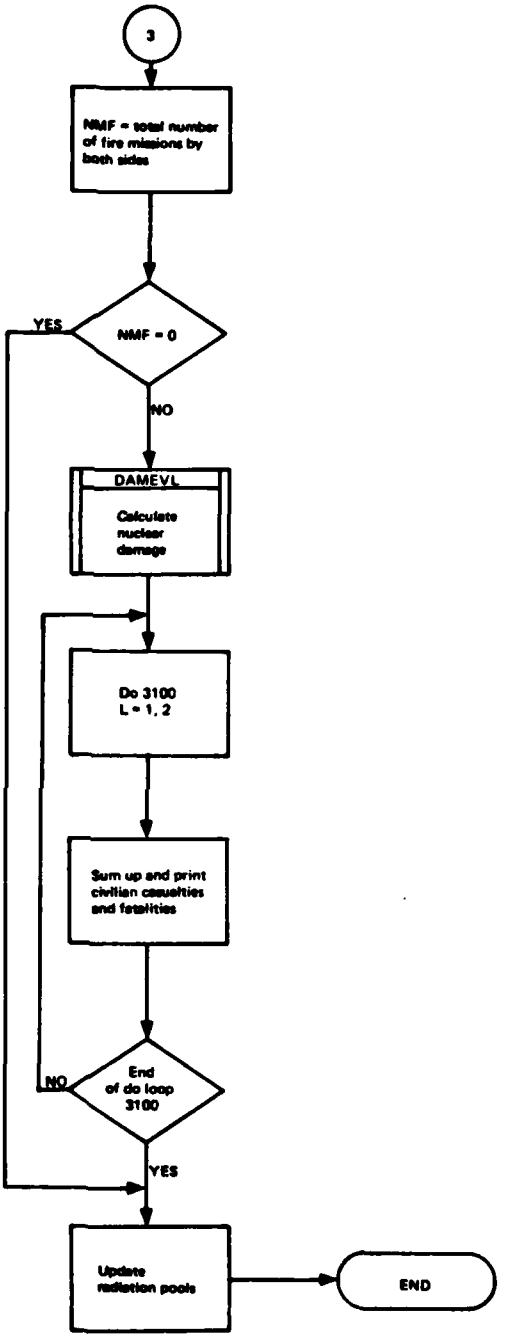


Figure 73. Flowchart of TACWAR Routine NUC6 (Part 2 of 2)

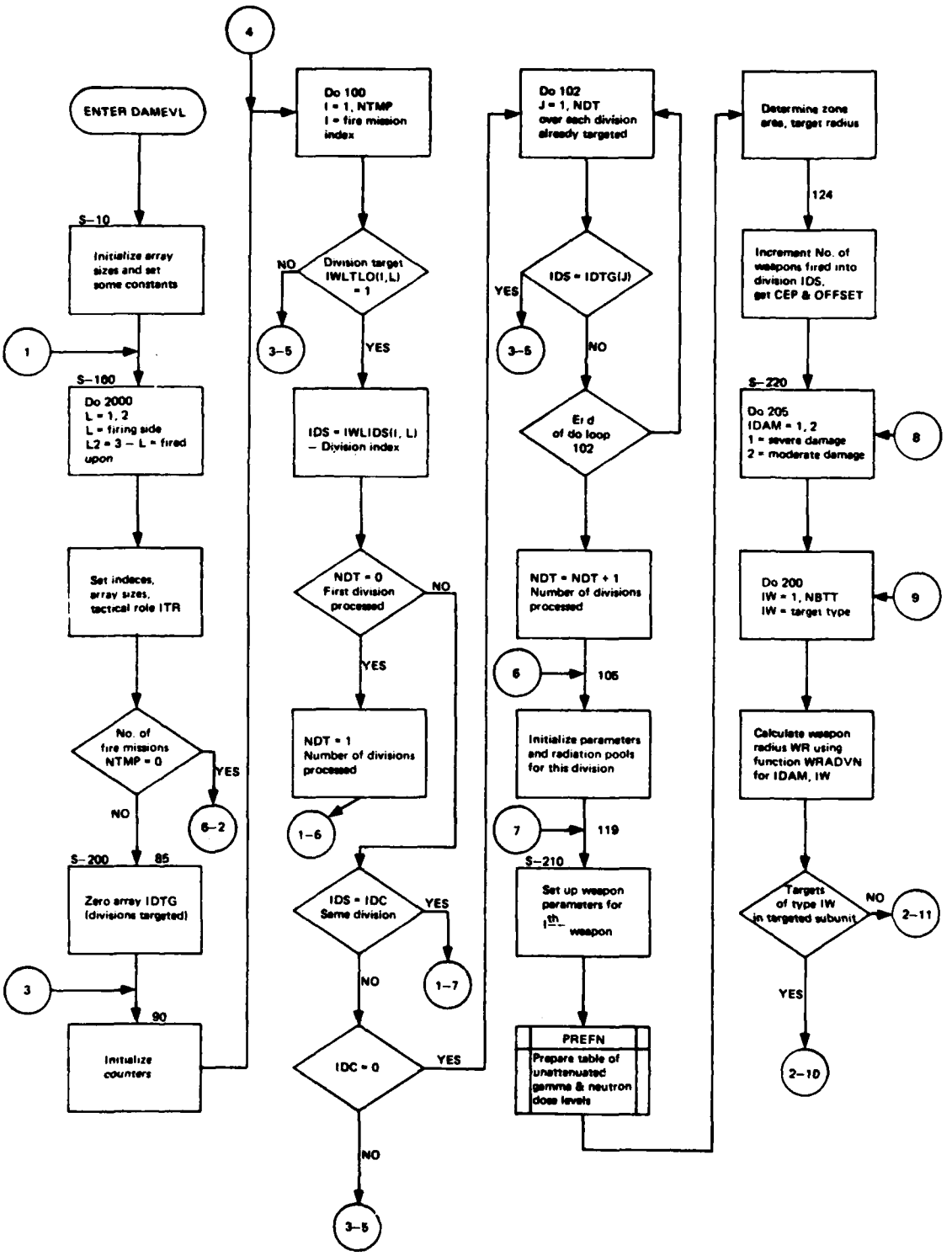


Figure 74. Flowchart of TACWAR Routine DAMEVL (Part 1 of 7)

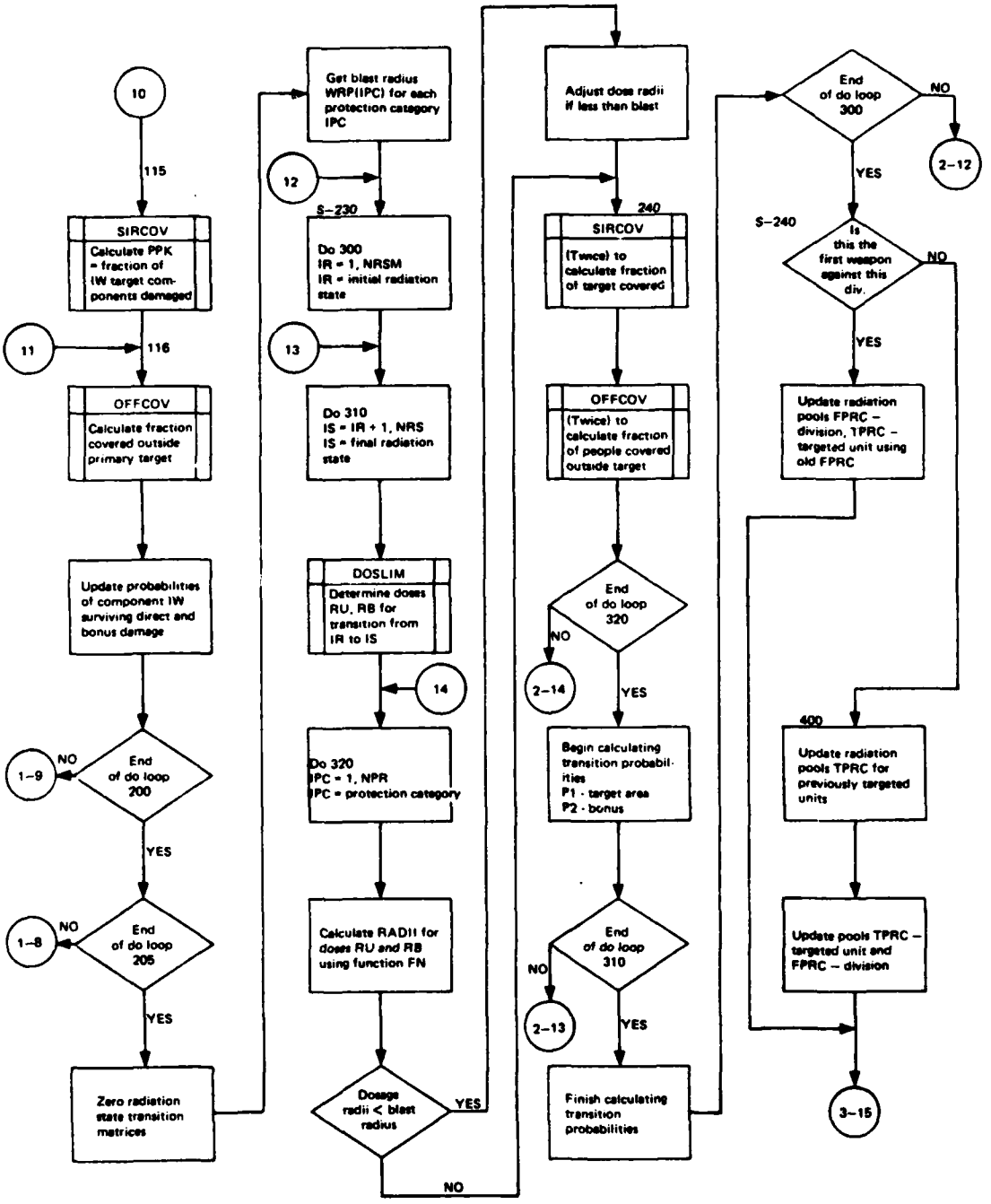


Figure 74. Flowchart of TACWAR Routine DAMEVL (Part 2 of 7)

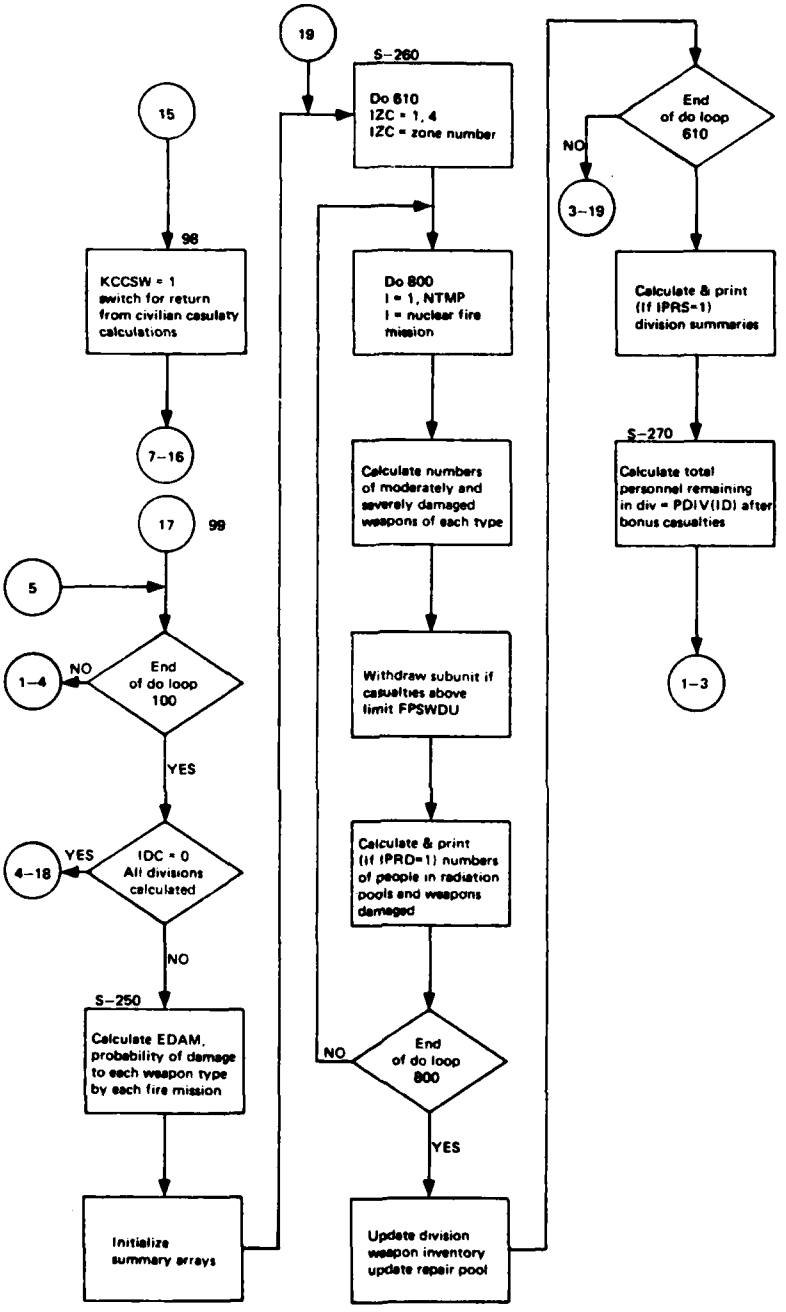


Figure 74. Flowchart of TACWAR Routine DAMEVL (Part 3 of 7)

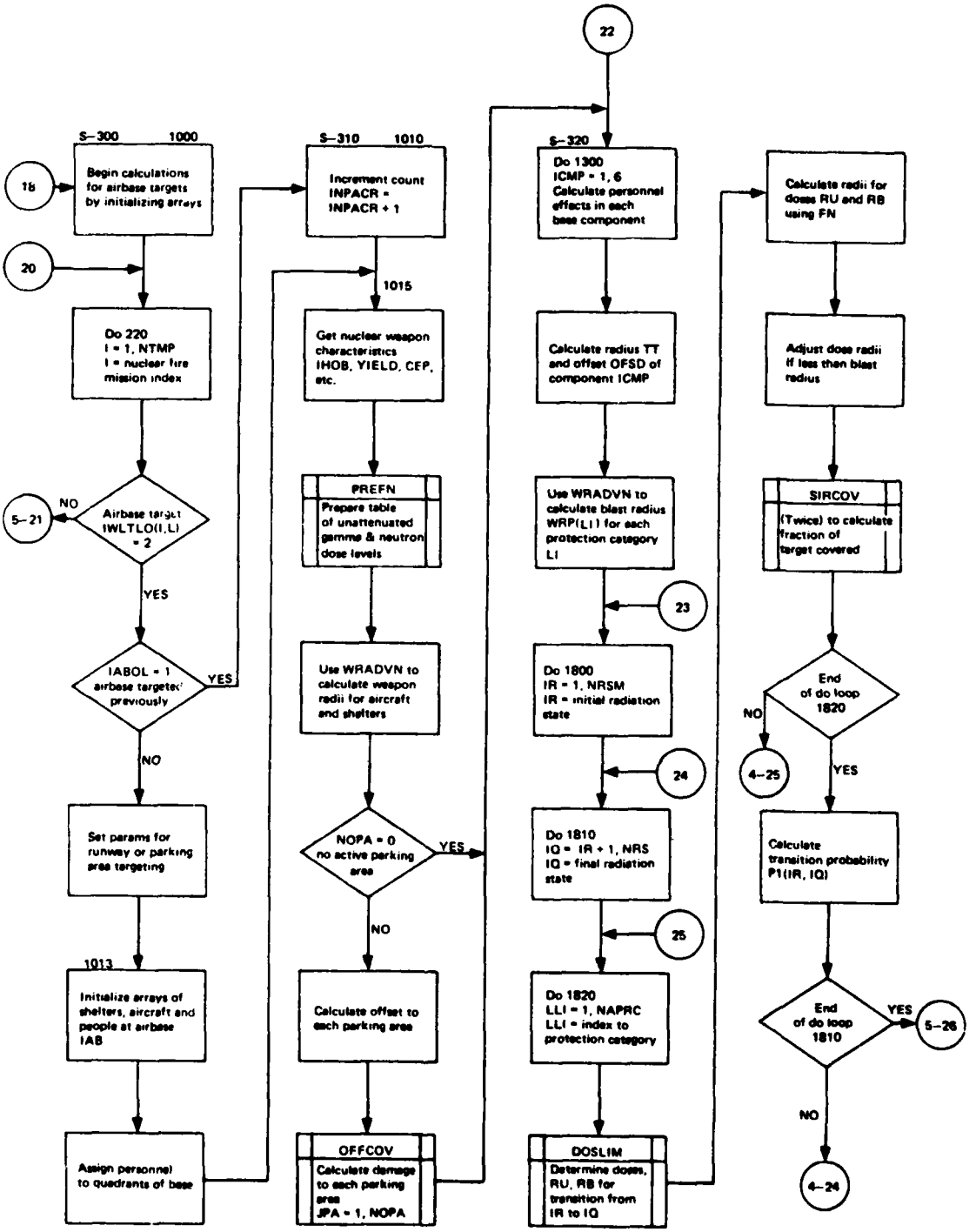


Figure 74. Flowchart of TACWAR Routine DAMEVL (Part 4 of 7)

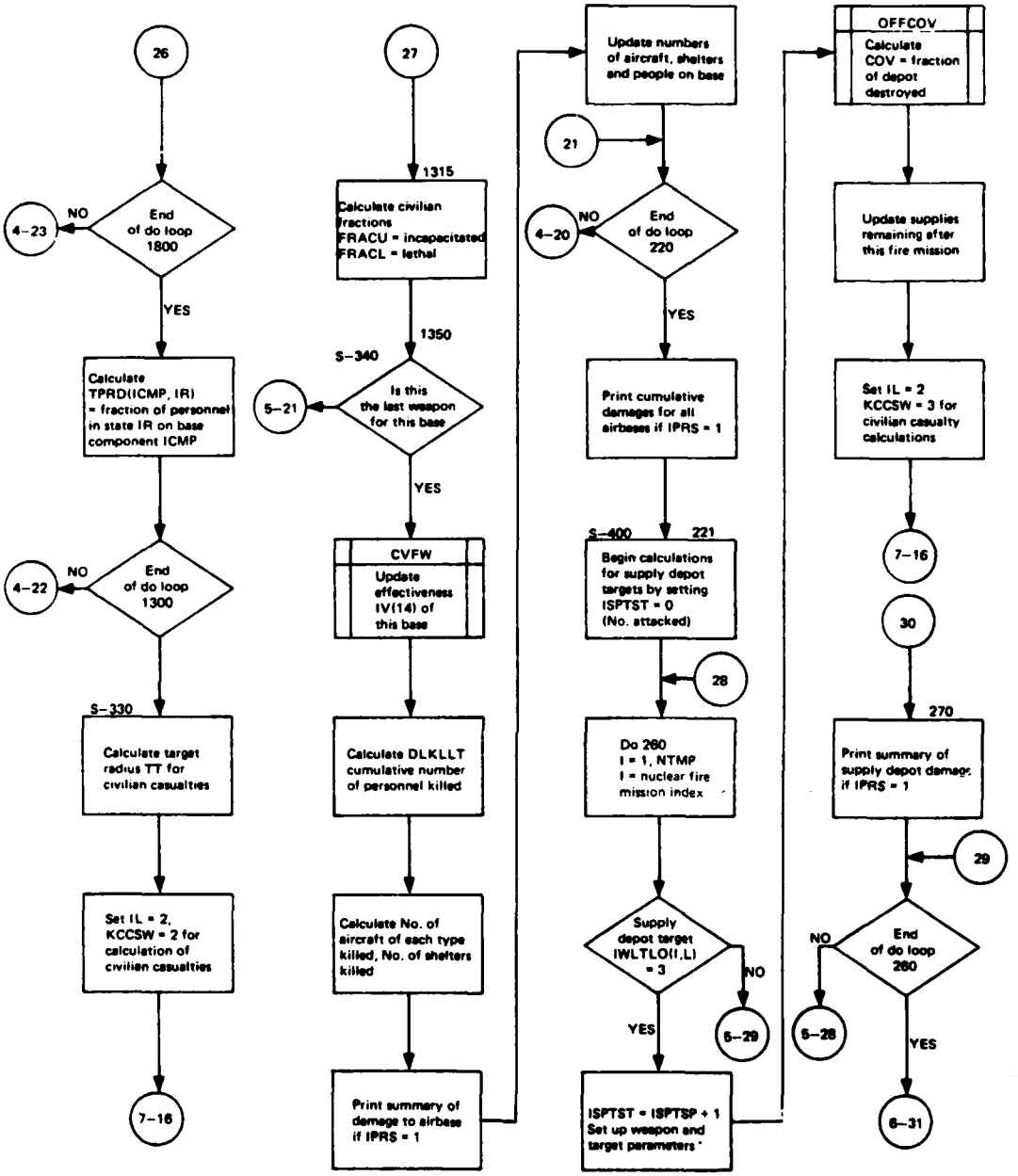


Figure 74. Flowchart of TACWAR Routine DAMEVL (Part 5 of 7)

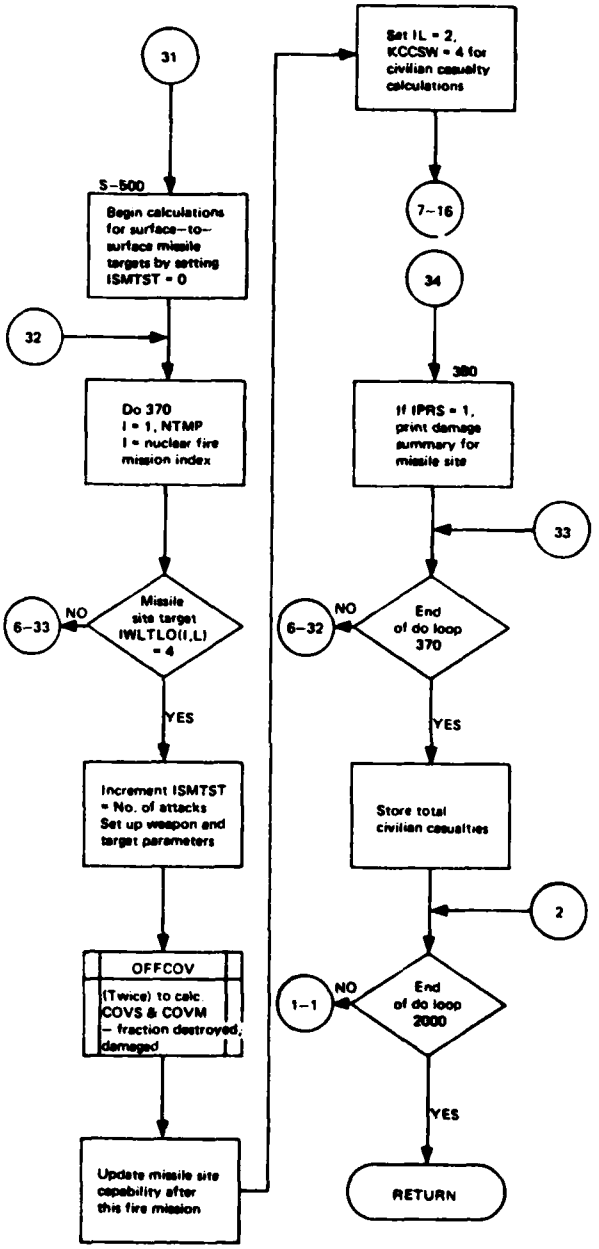


Figure 74. Flowchart of TACWAR Routine DAMEVL (Part 6 of 7)

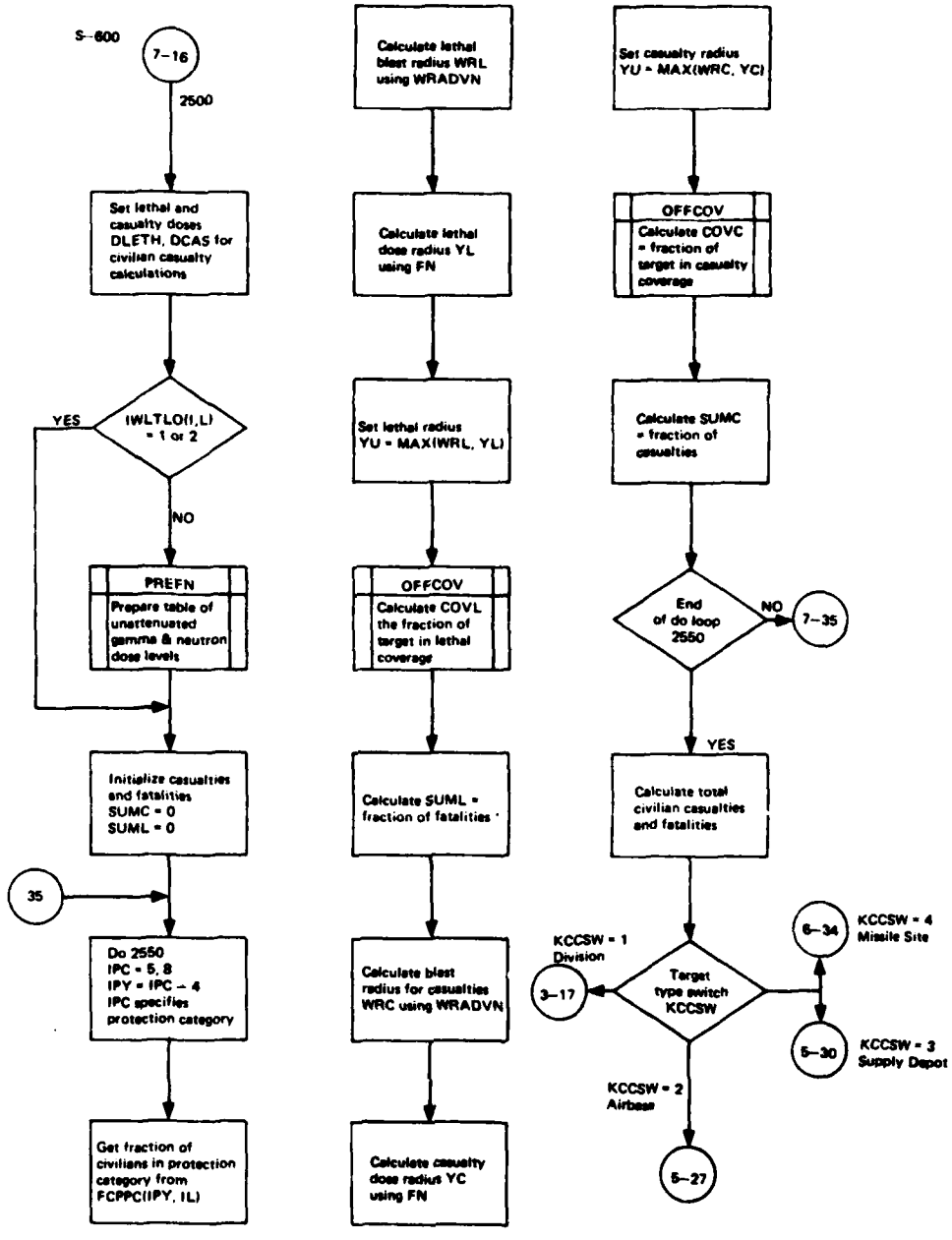


Figure 74. Flowchart of TACWAR Routine DAMEVL (Part 7 of 7)

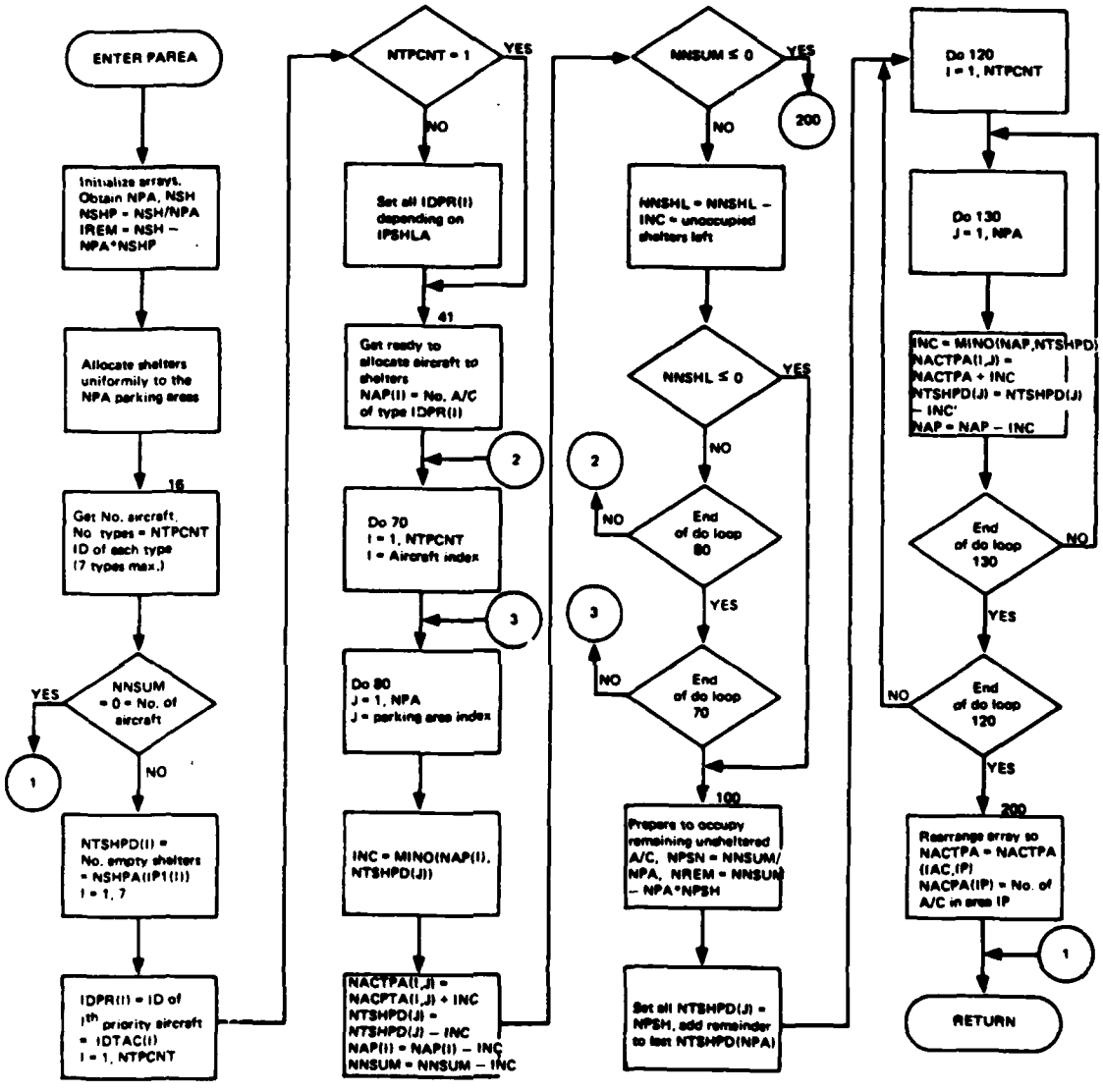


Figure 75. Flowchart of TACWAR Routine PAREA

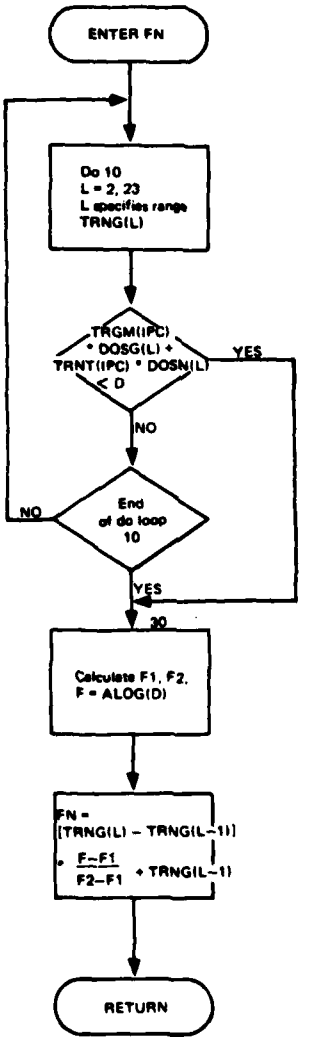


Figure 76. Flowchart of TACWAR Function FN

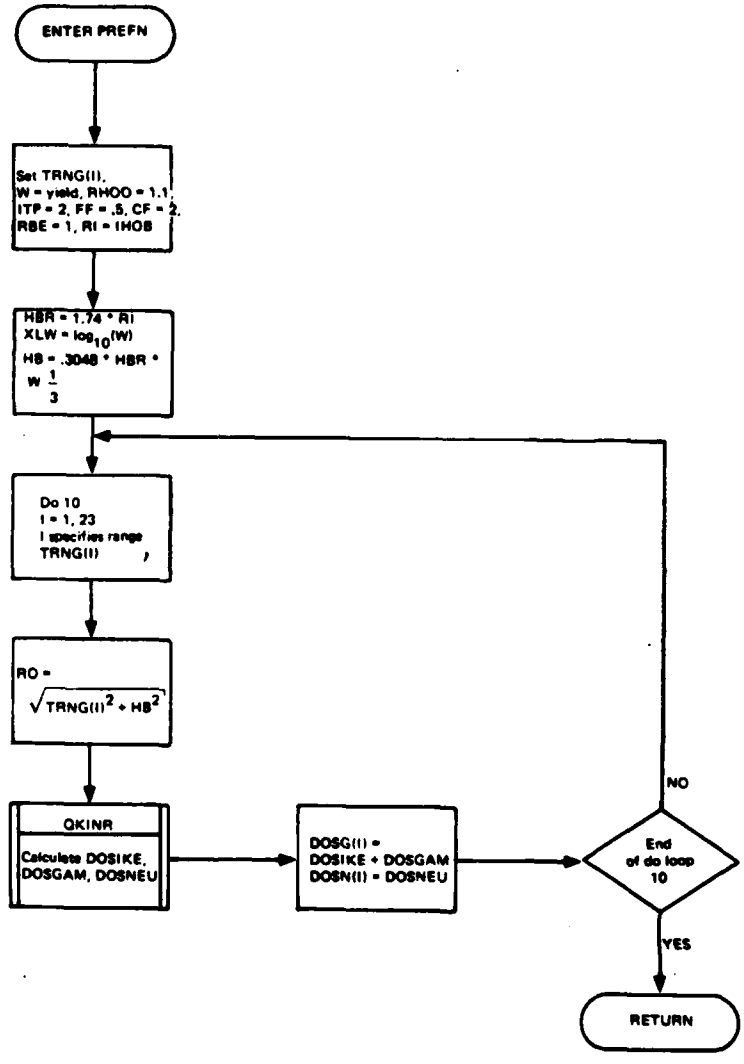


Figure 77. Flowchart of TACWAR Routine PREFN

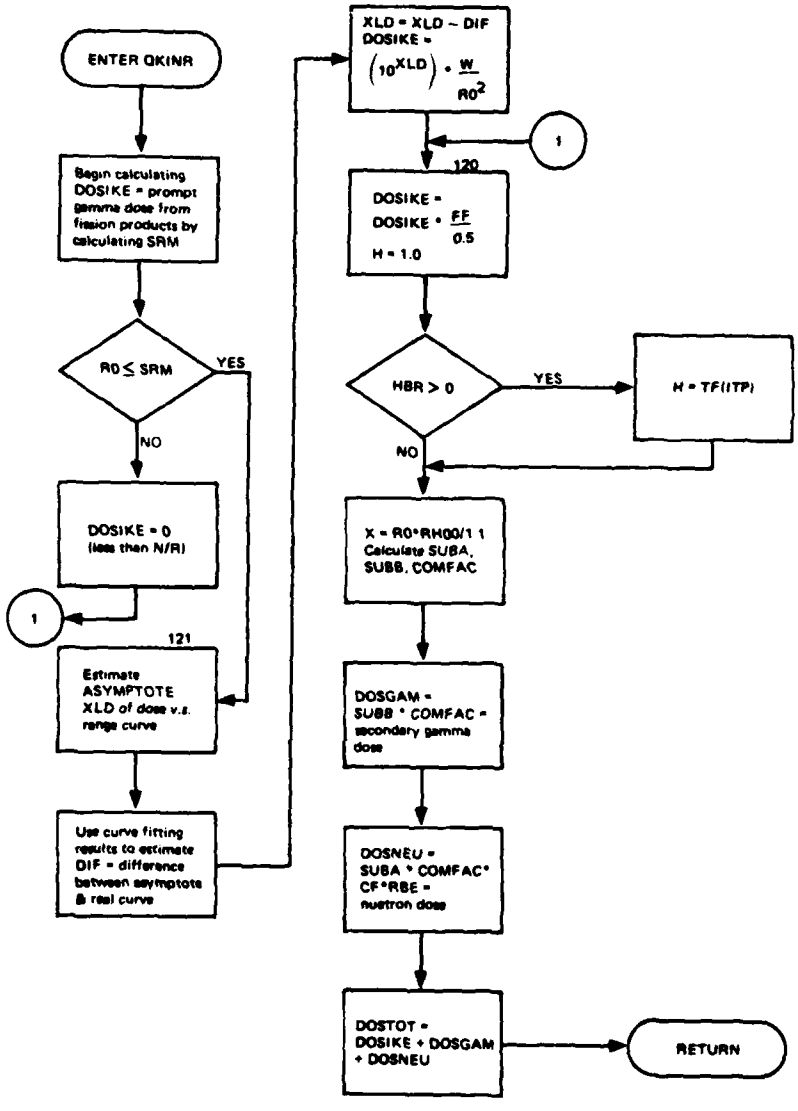


Figure 78. Flowchart of TACWAR Routine QKINR

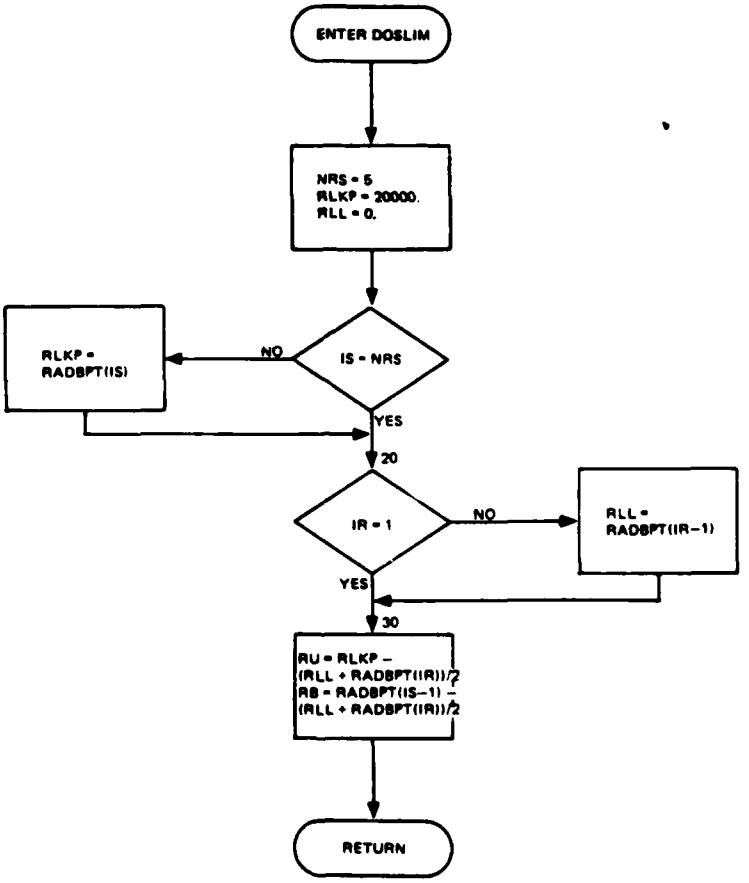


Figure 79. Flowchart of TACWAR Routine DOSLIM

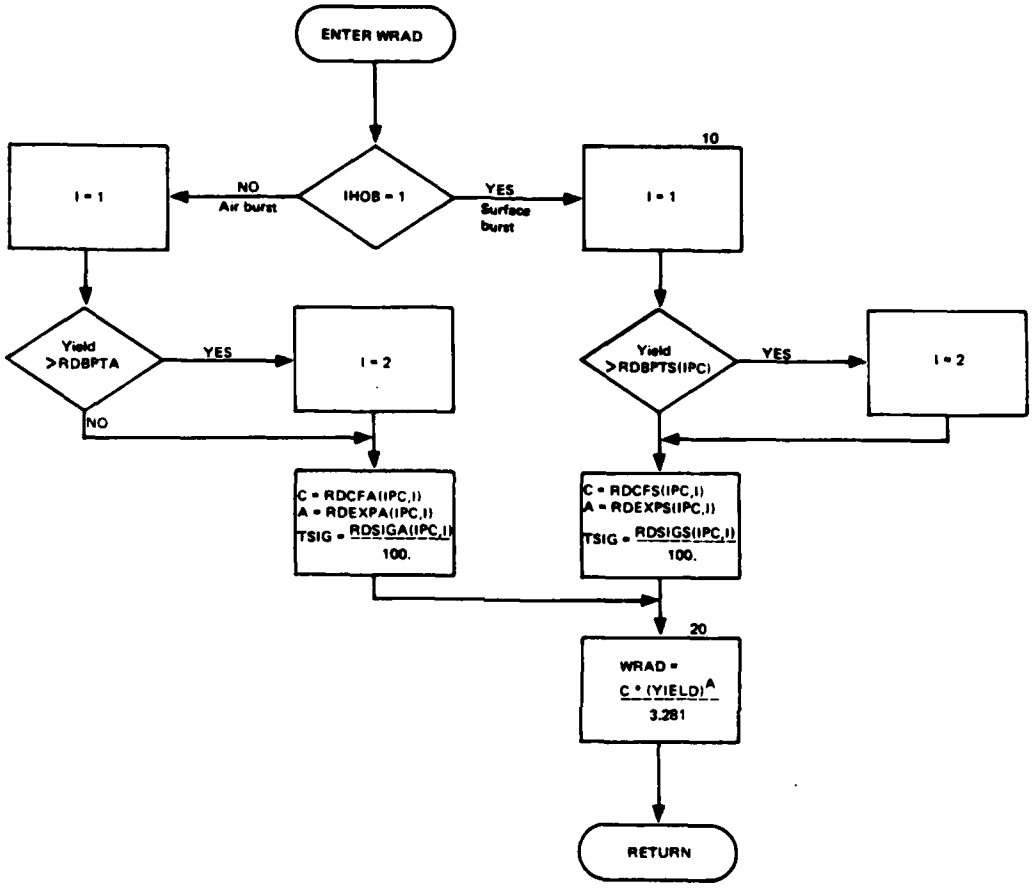


Figure 80. Flowchart of TACWAR Function WRAD

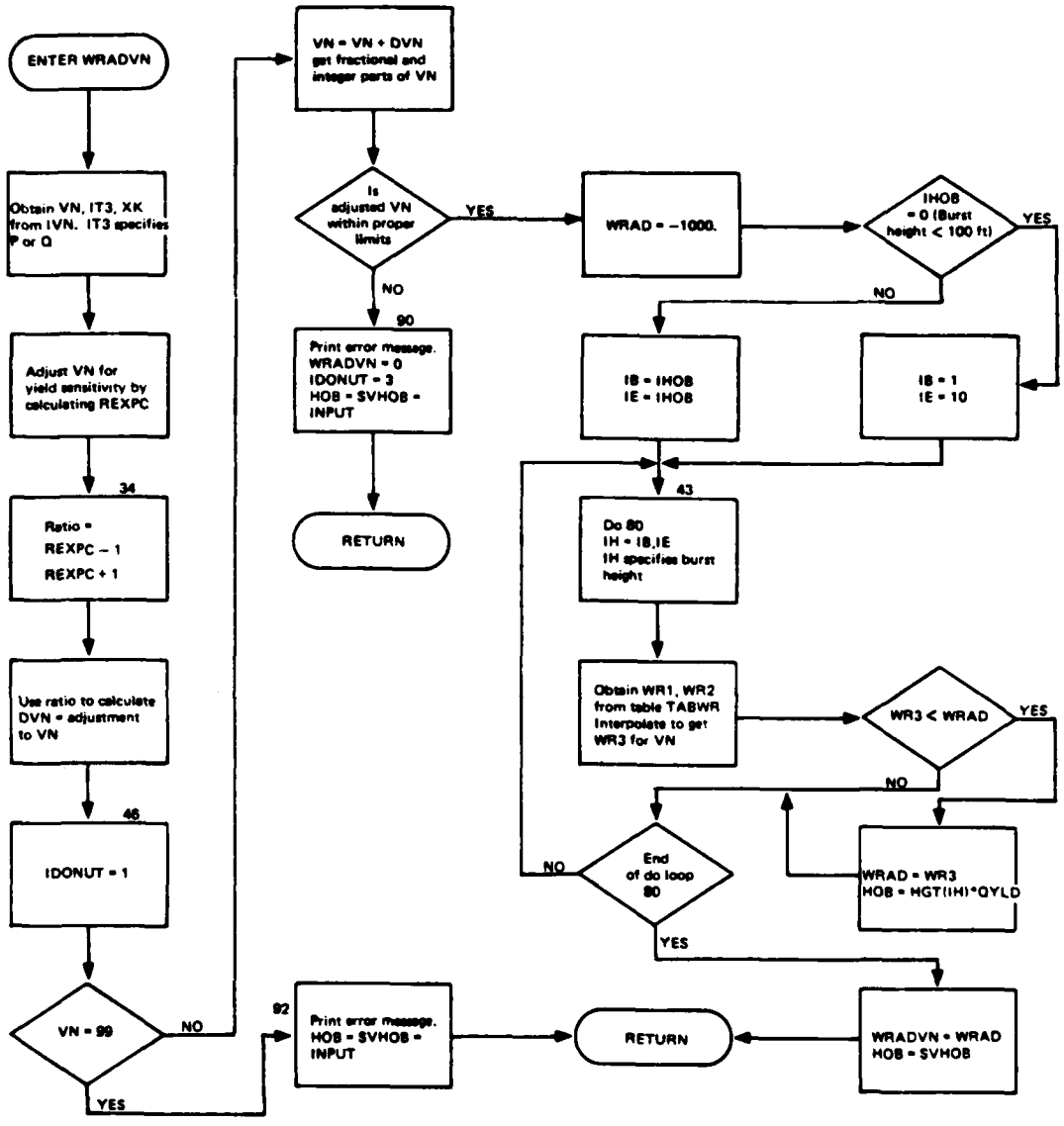


Figure 81. Flowchart of TACWAR Routine WRADVN

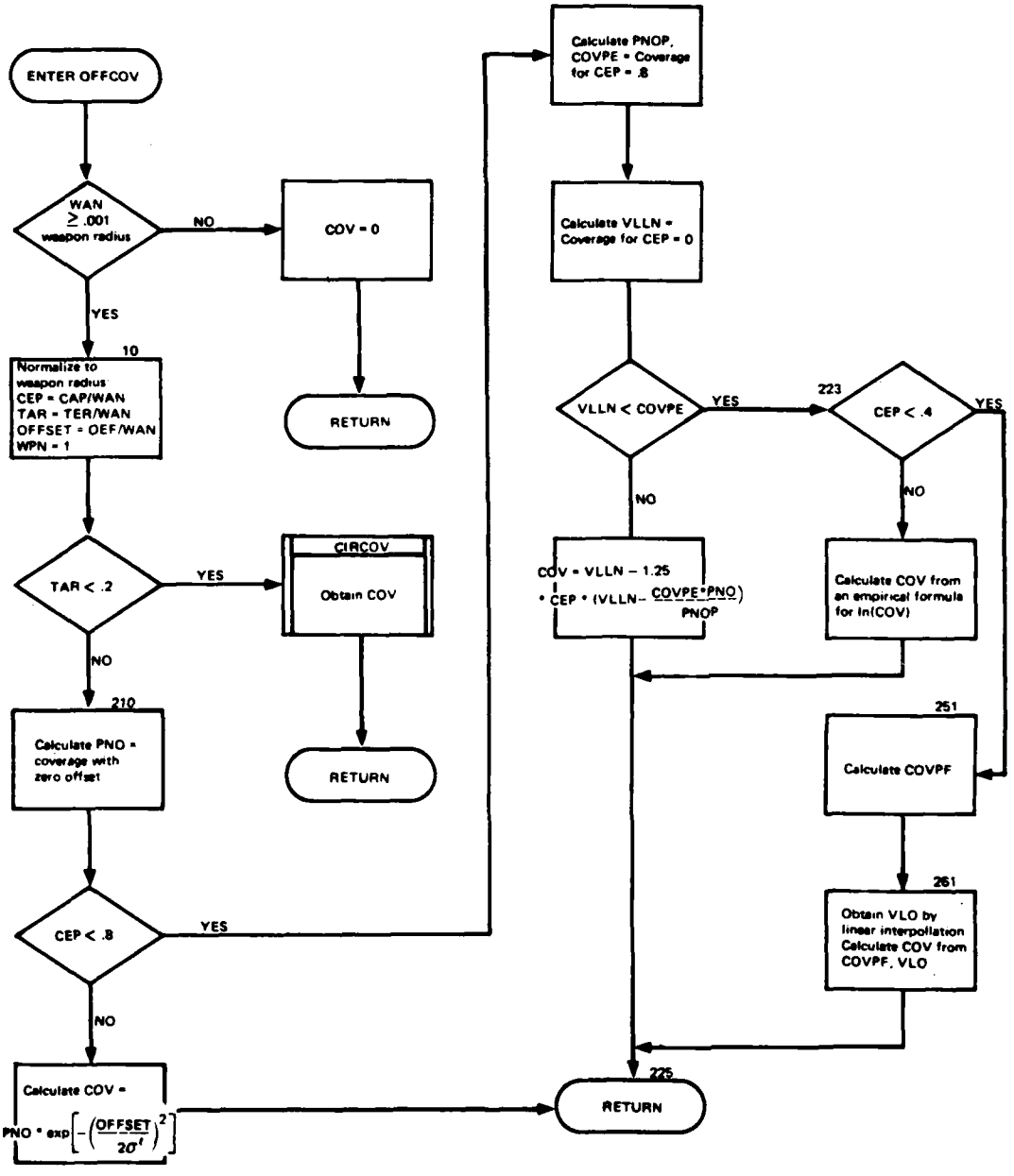


Figure 82. Flowchart of TACWAR Routine OFFCOV

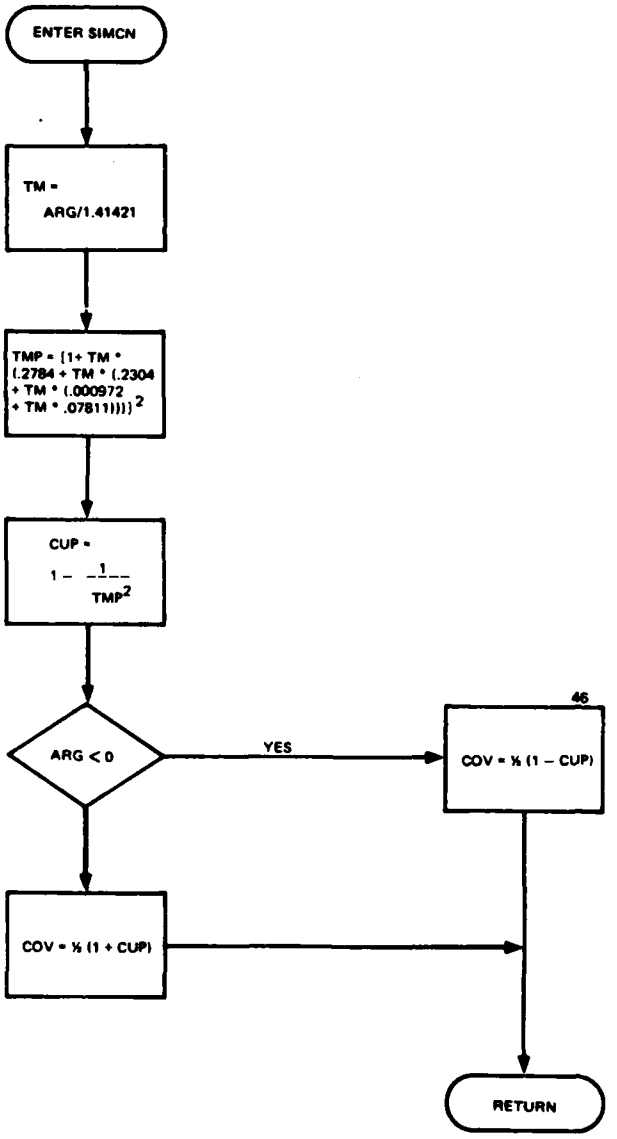


Figure 83. Flowchart of TACWAR Routine SIMCN

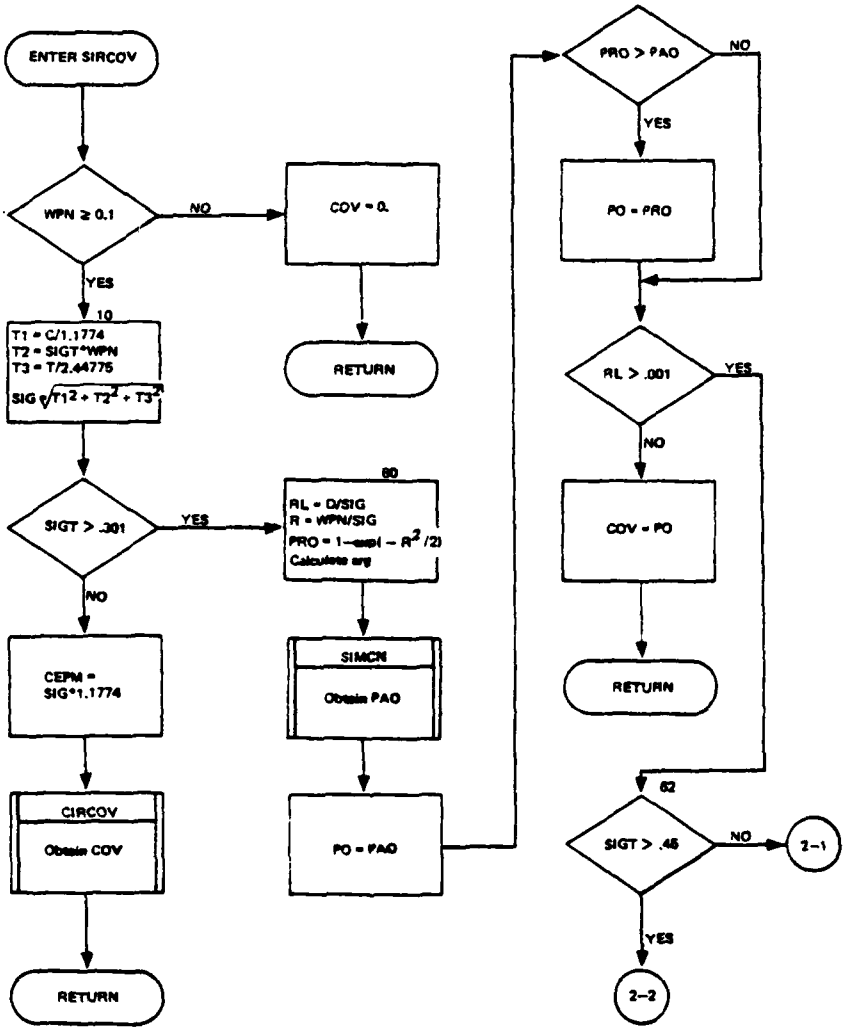


Figure 84. Flowchart of TACWAR Routine SIRCOV (Part 1 of 2)

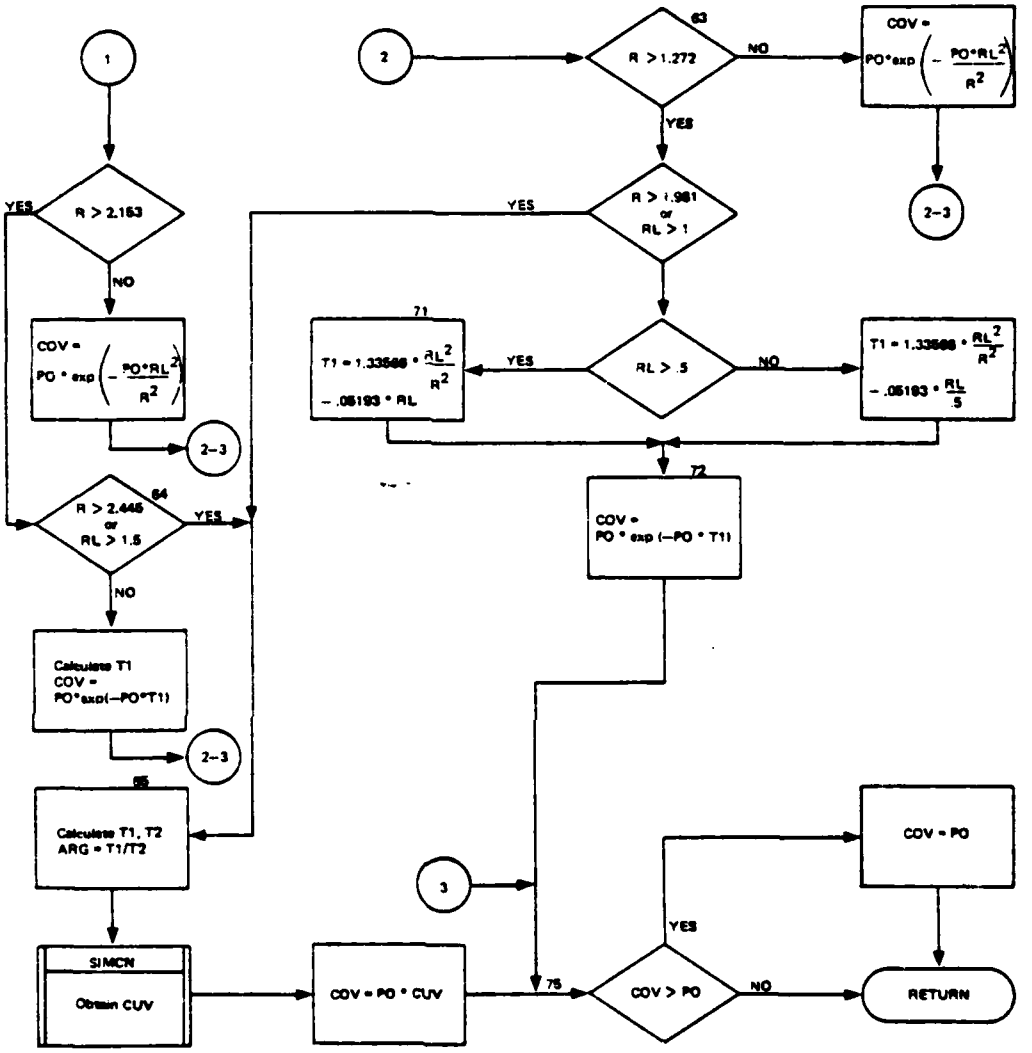


Figure 84. Flowchart of TACWAR Routine SIRCOV (Part 2 of 2)

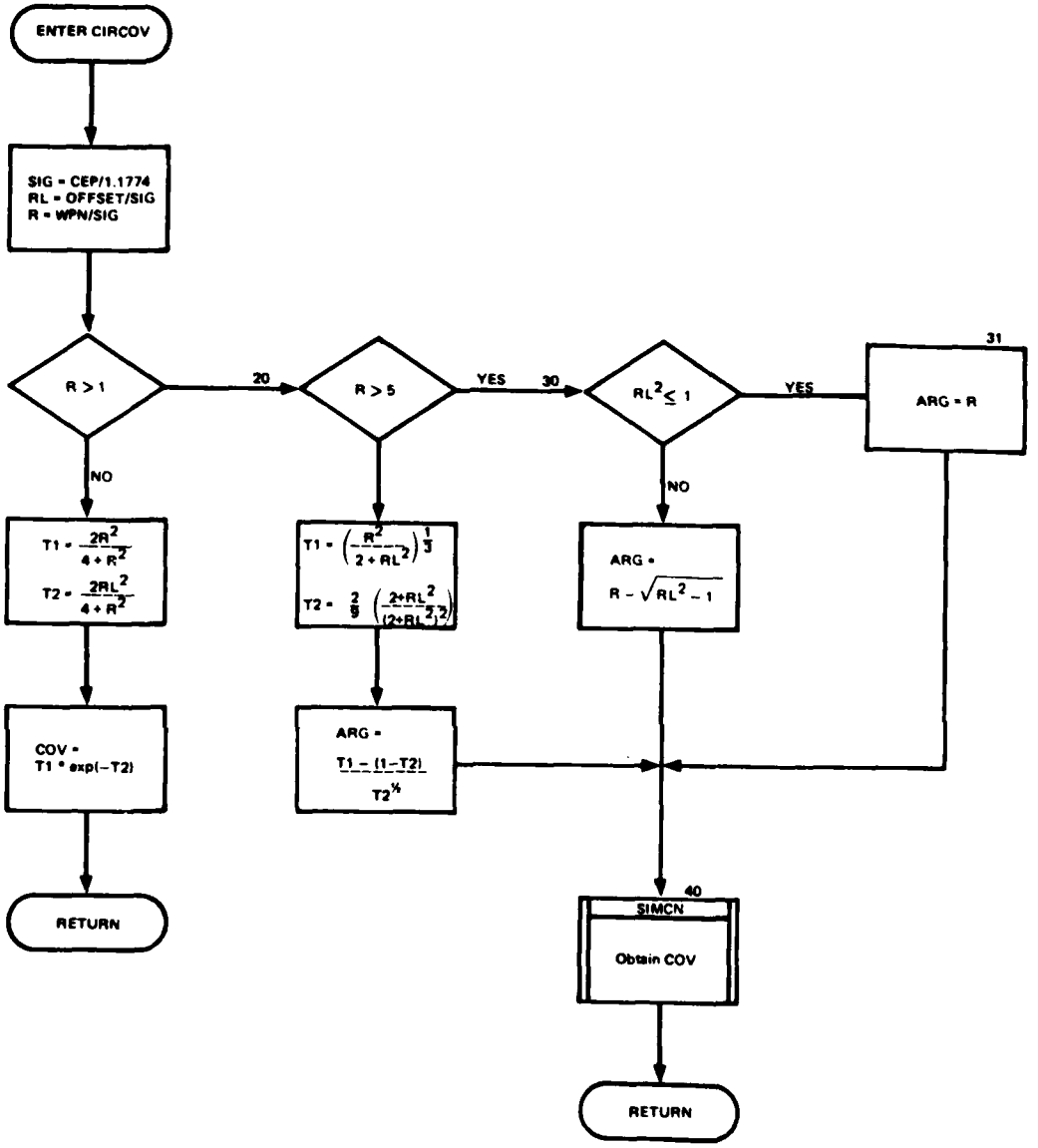


Figure 85. Flowchart of TACWAR Routine CIRCOV

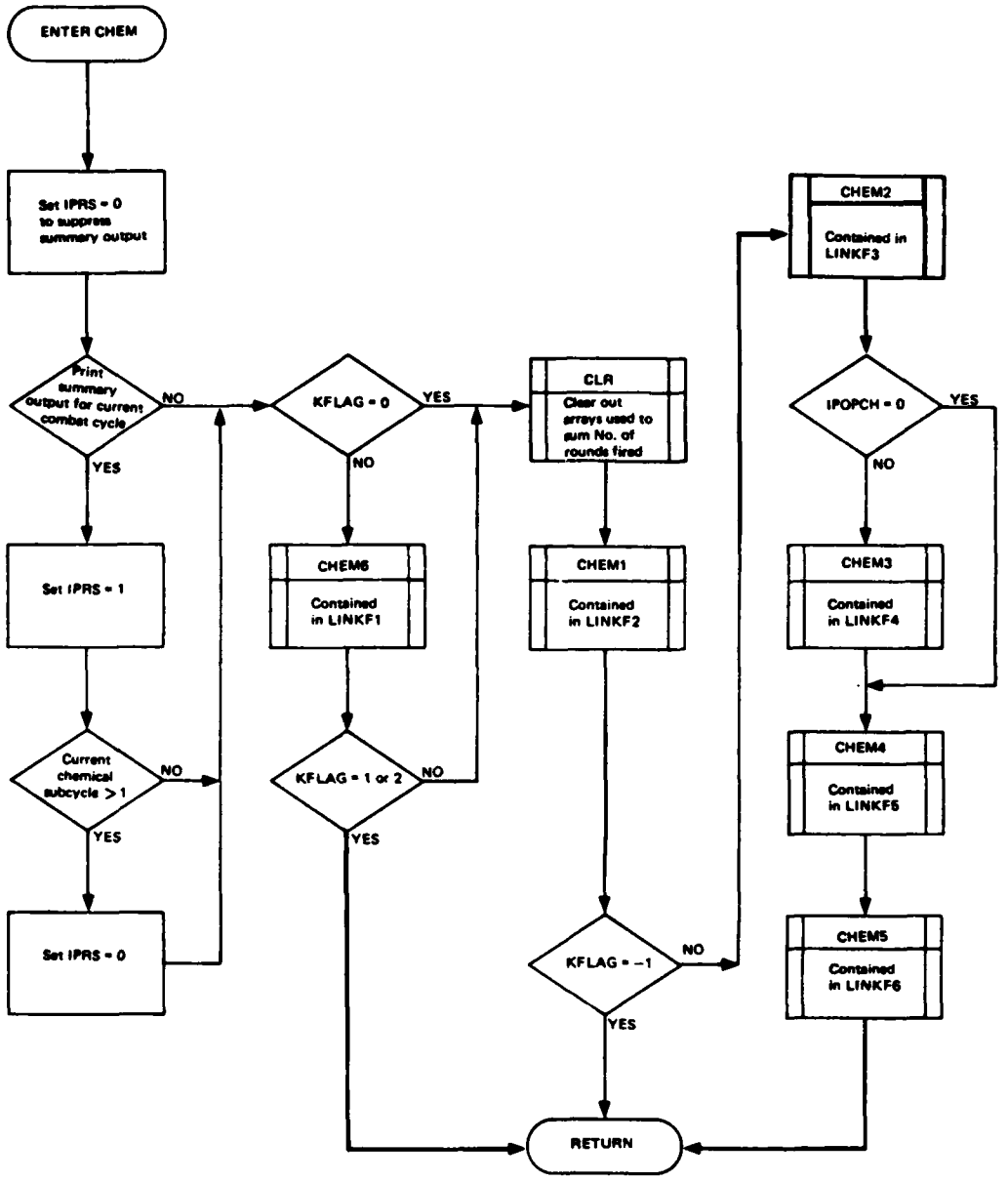


Figure 86. Flowchart of TACWAR Routine CHEM

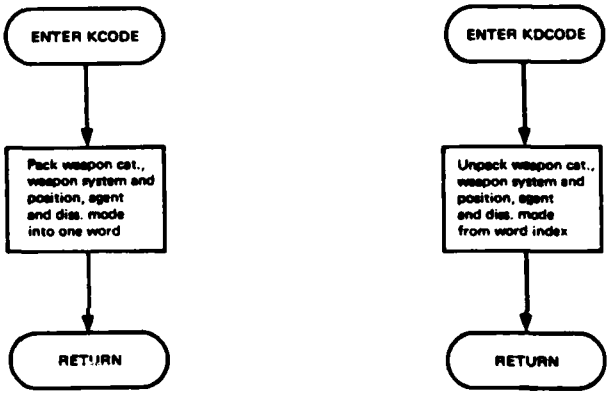


Figure 87. Flowcharts of TACWAR Routines KCODE and KDCODE

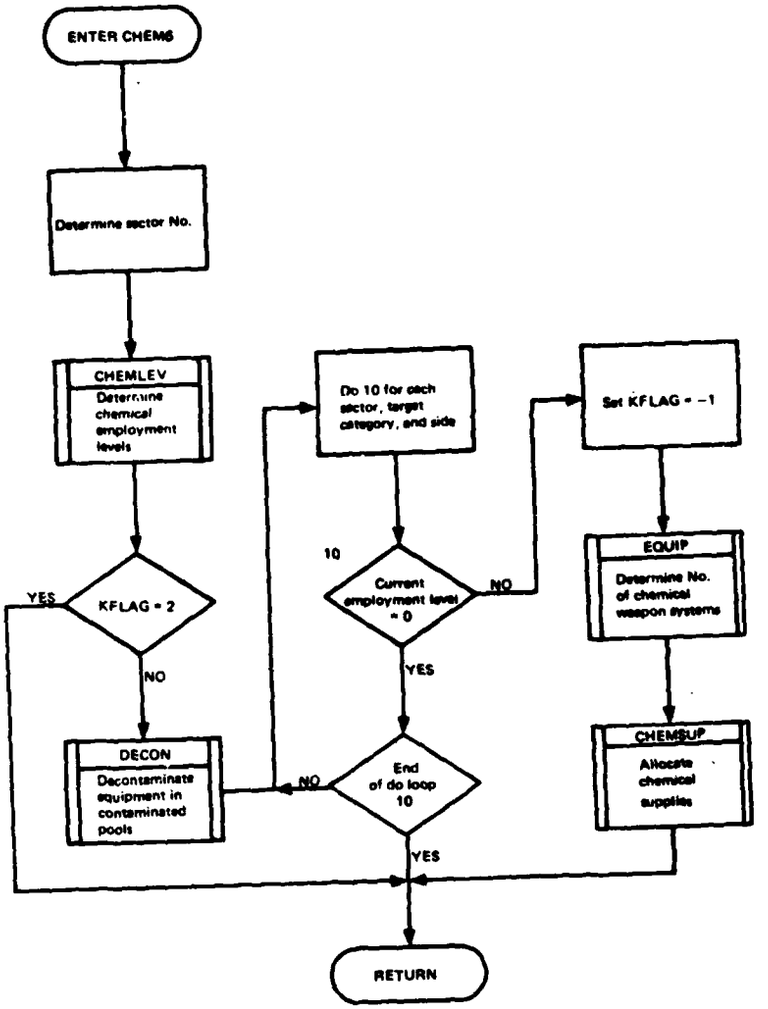


Figure 88. Flowchart of TACWAR Routine CHEM6

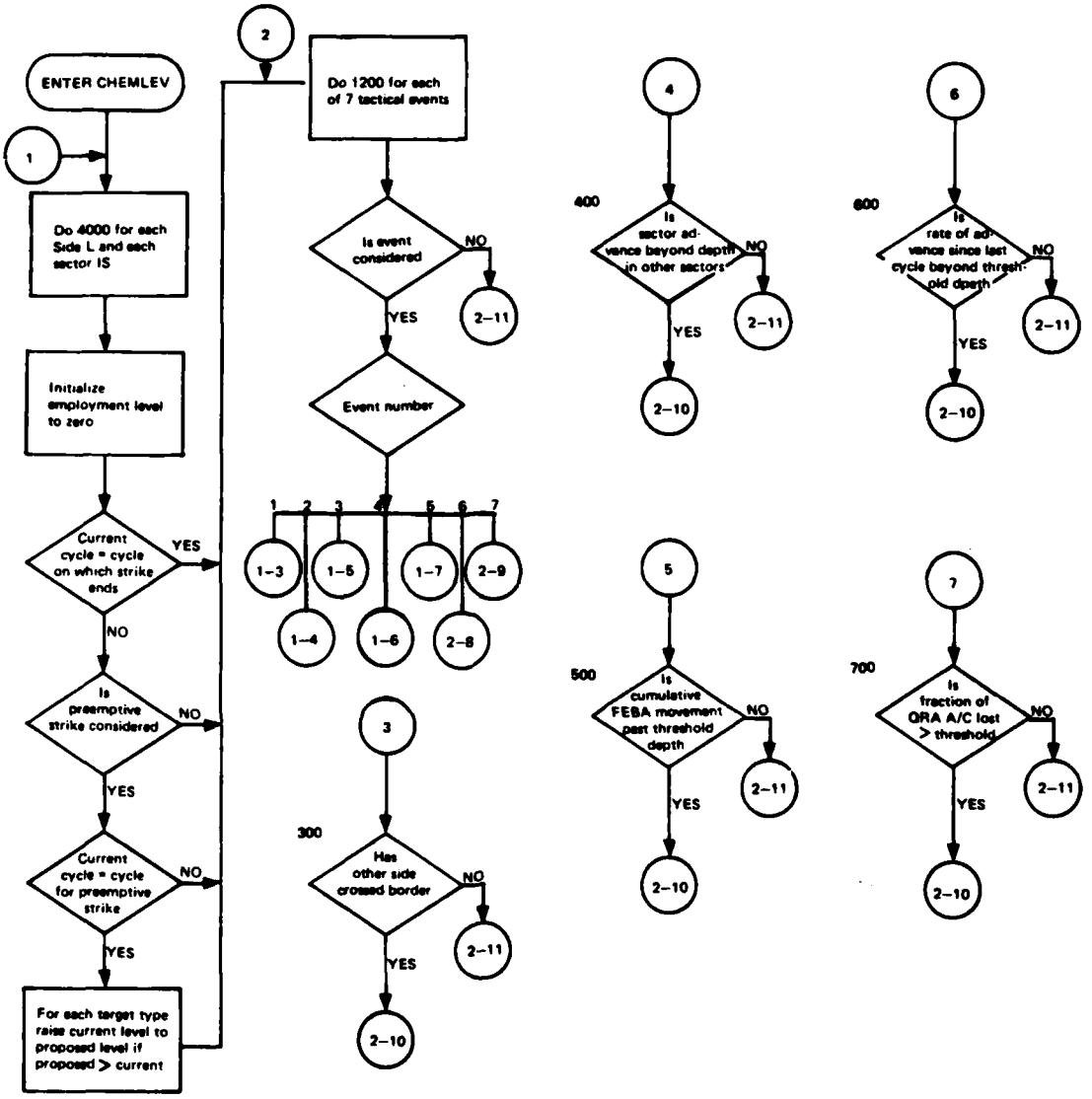


Figure 89. Flowchart of TACWAR Routine CHEMLEV (Part 1 of 2)

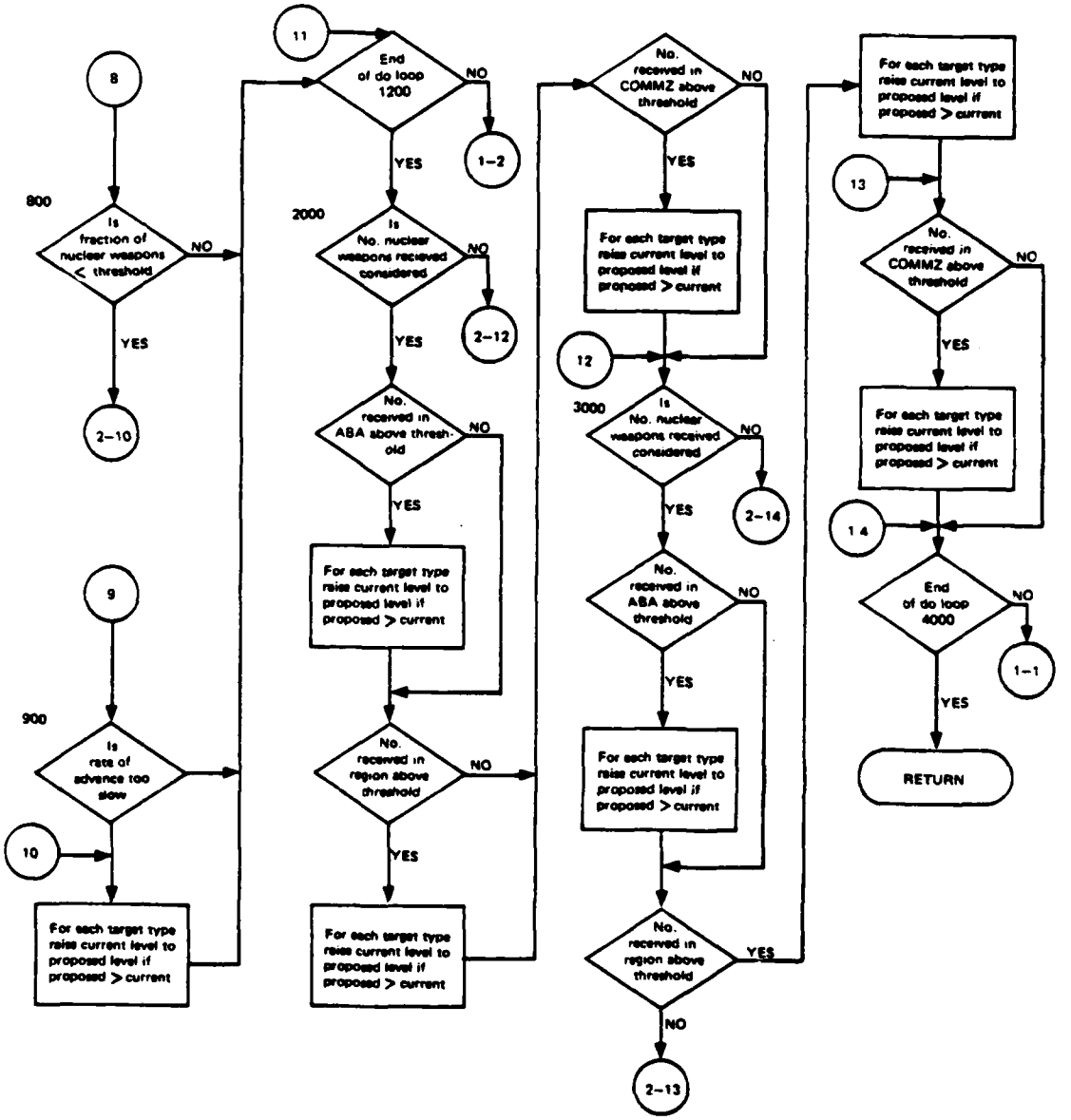


Figure 89. Flowchart of TACWAR Routine CHEMLEV (Part 2 of 2)

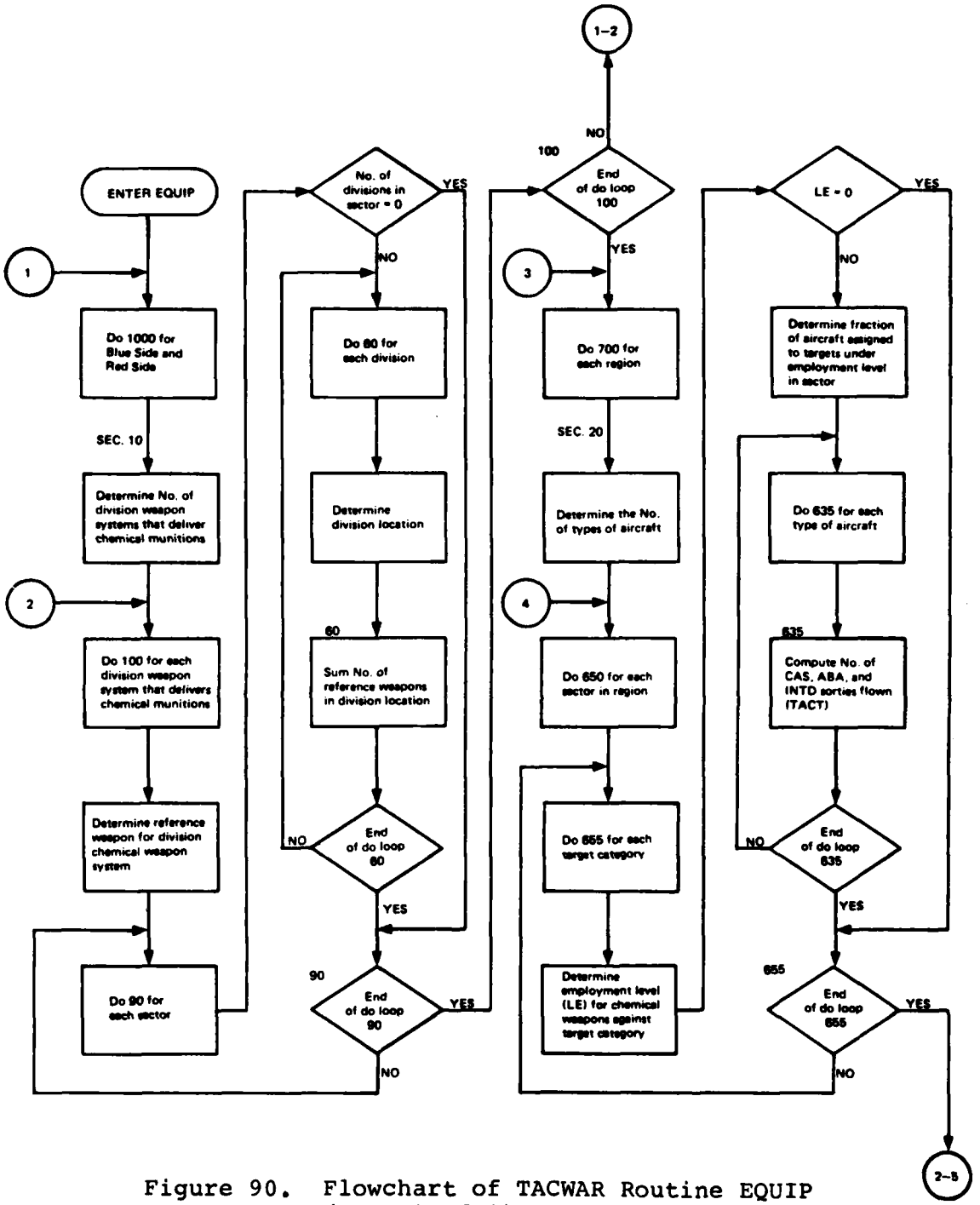


Figure 90. Flowchart of TACWAR Routine EQUIP (Part 1 of 3)

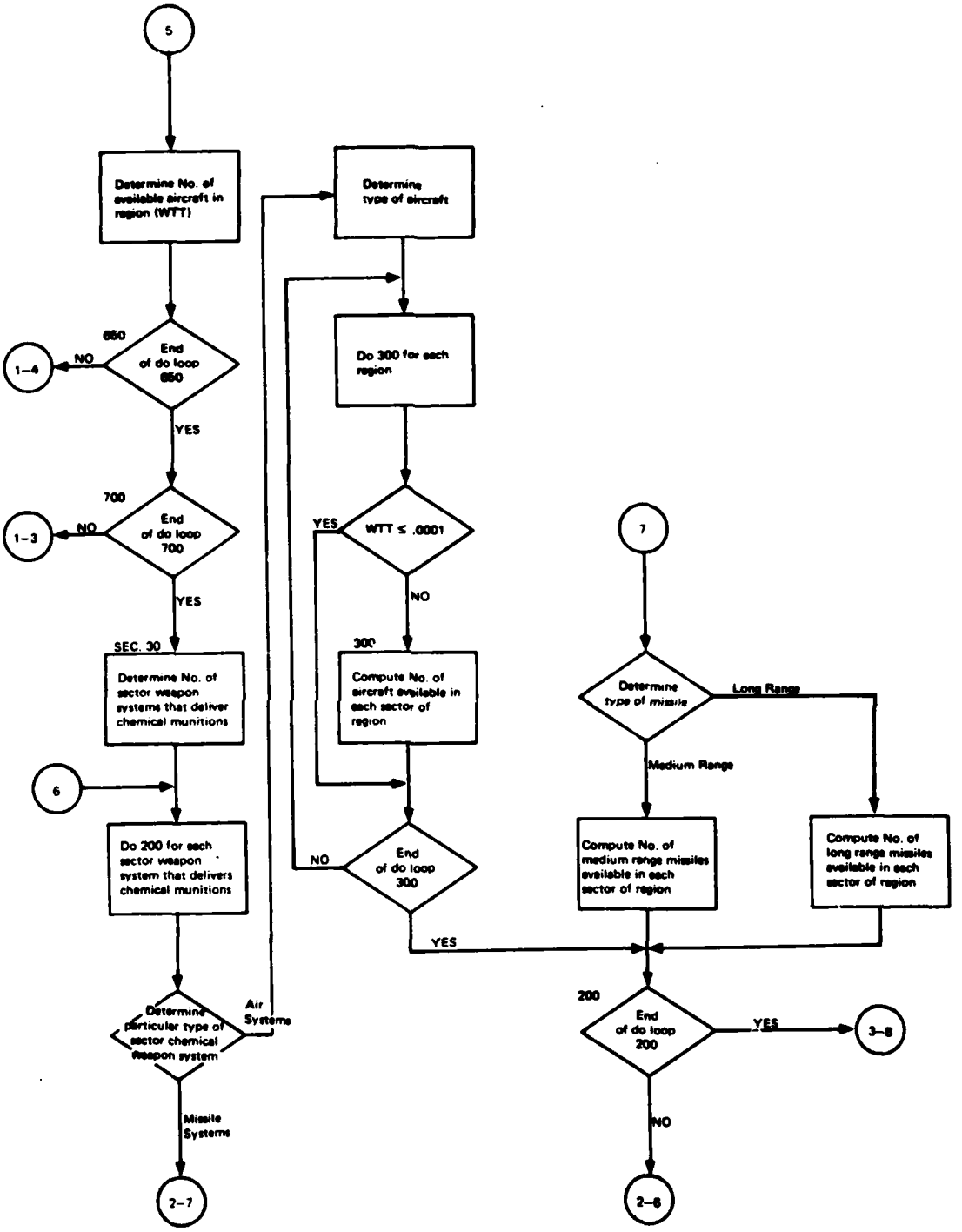


Figure 90. Flowchart of TACWAR Routine EQUIP (Part 2 of 3)

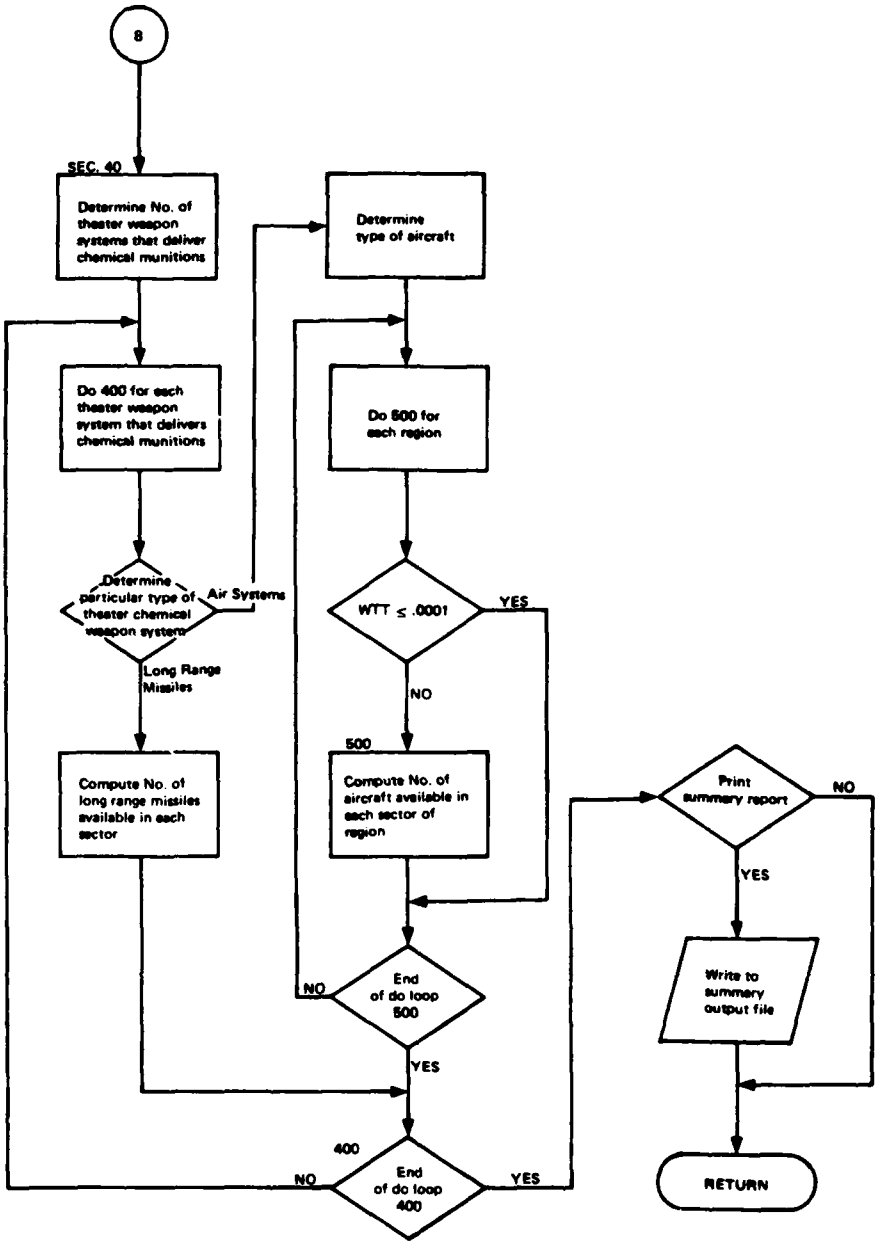


Figure 90. Flowchart of TACWAR Routine EQUIP (Part 3 of 3)

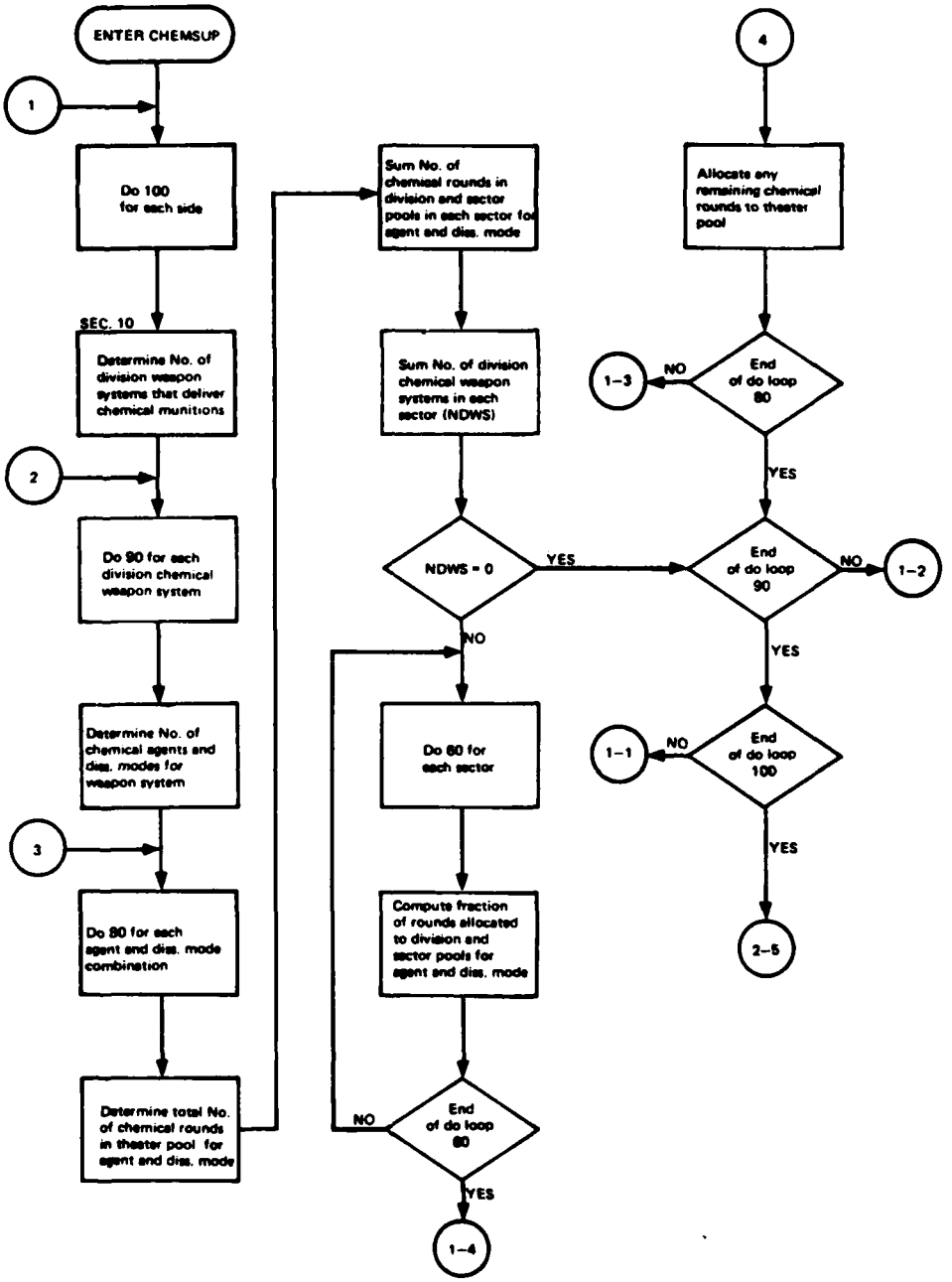


Figure 91. Flowchart of TACWAR Routine CHEMSUP (Part 1 of 2)

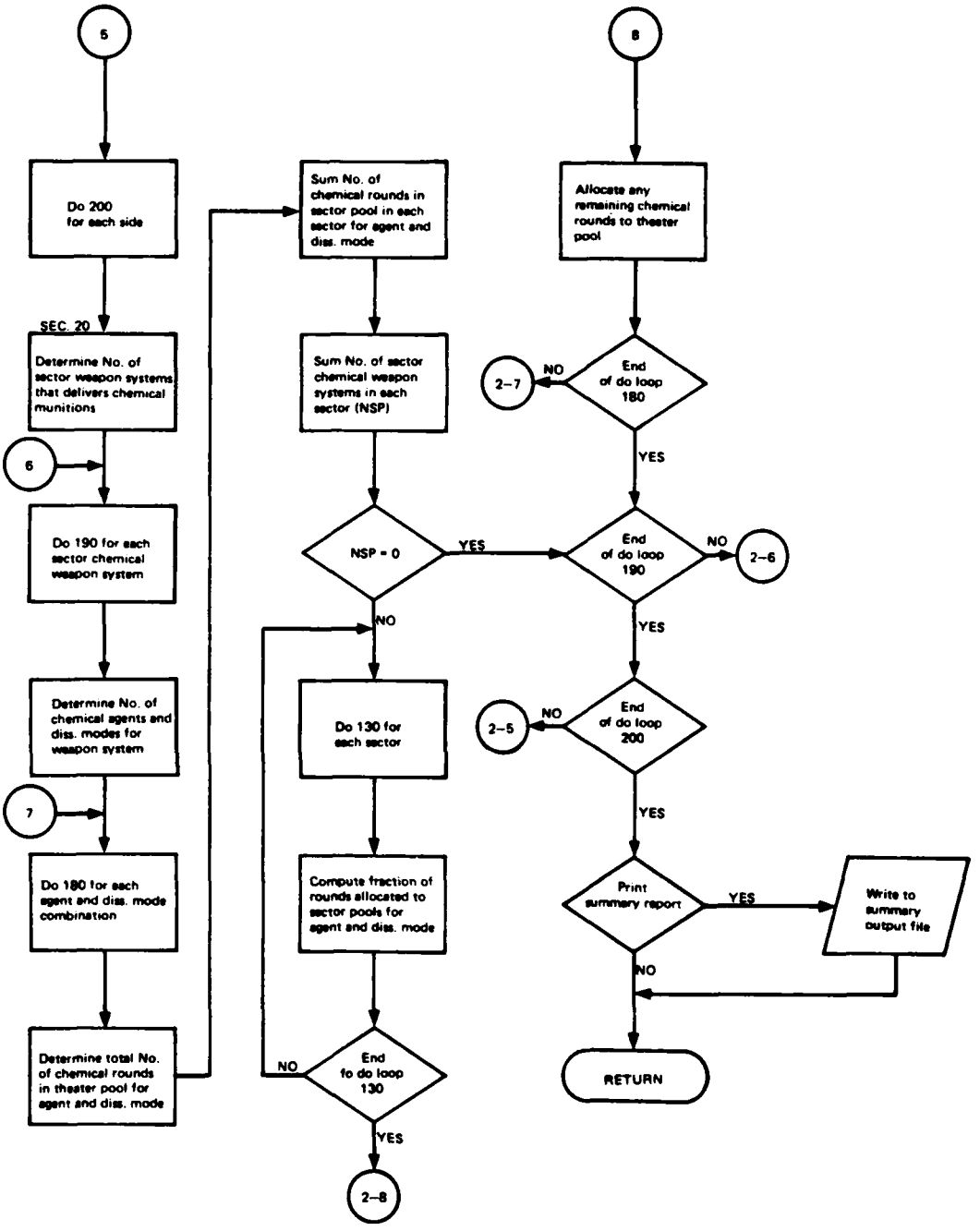


Figure 91. Flowchart of TACWAR Routine CHEMSUP (Part 2 of 2)

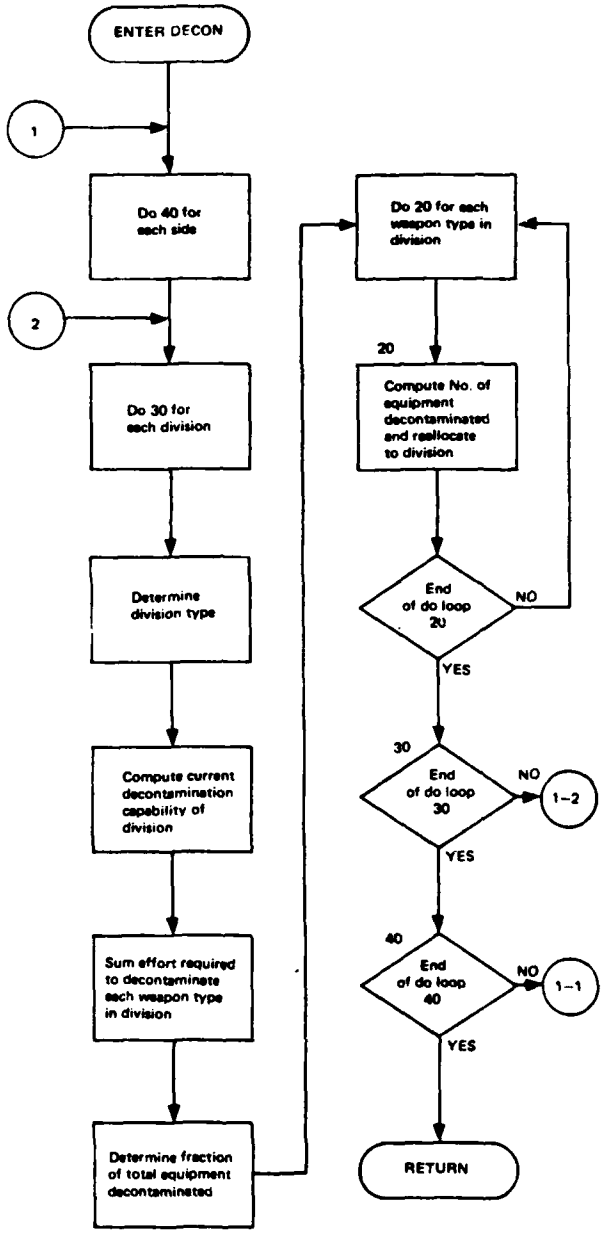


Figure 92. Flowchart of TACWAR Routine DECON

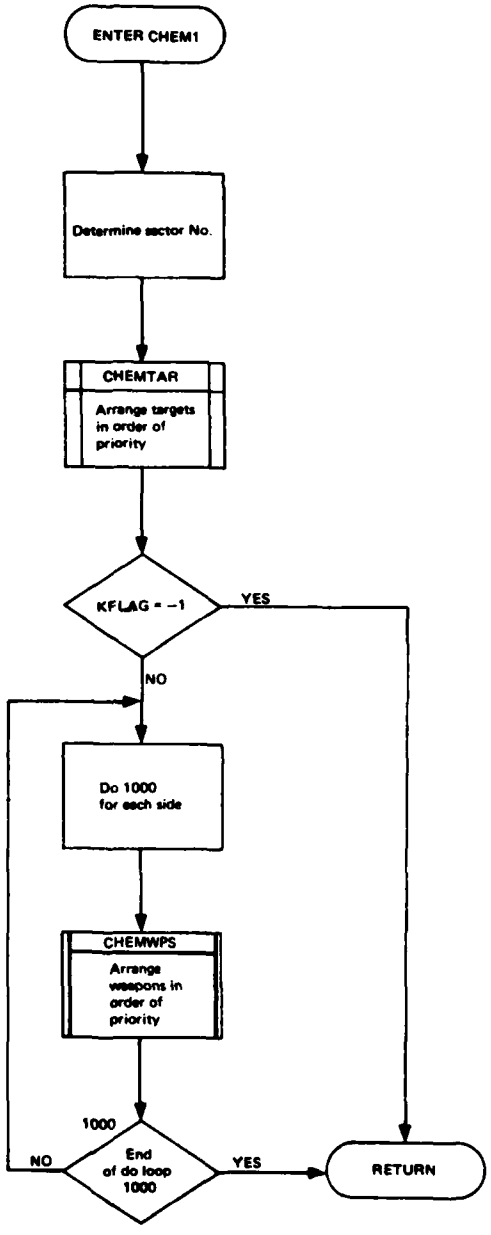


Figure 93. Flowchart of TACWAR Routine CHEM1

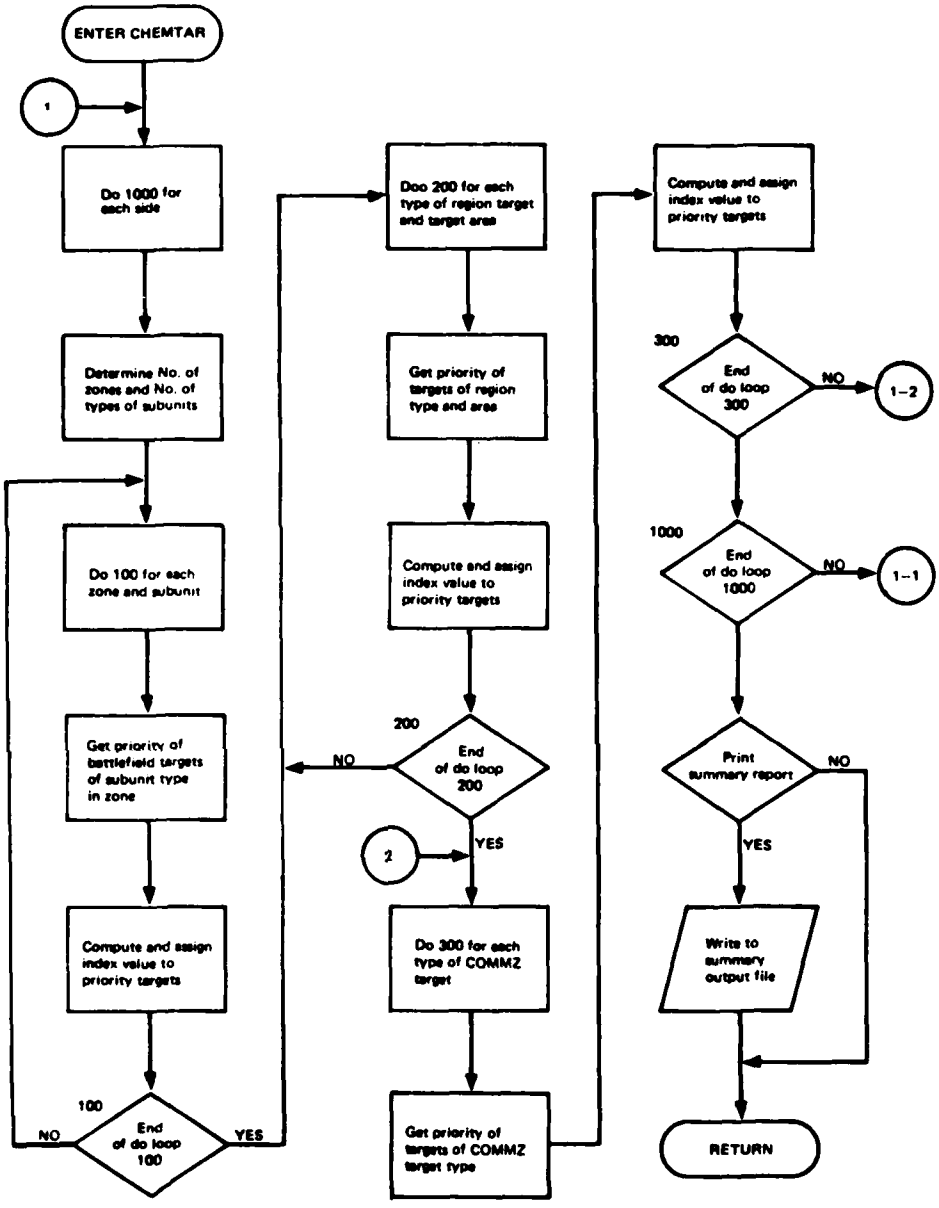


Figure 94. Flowchart of TACWAR Routine CHEMTAR

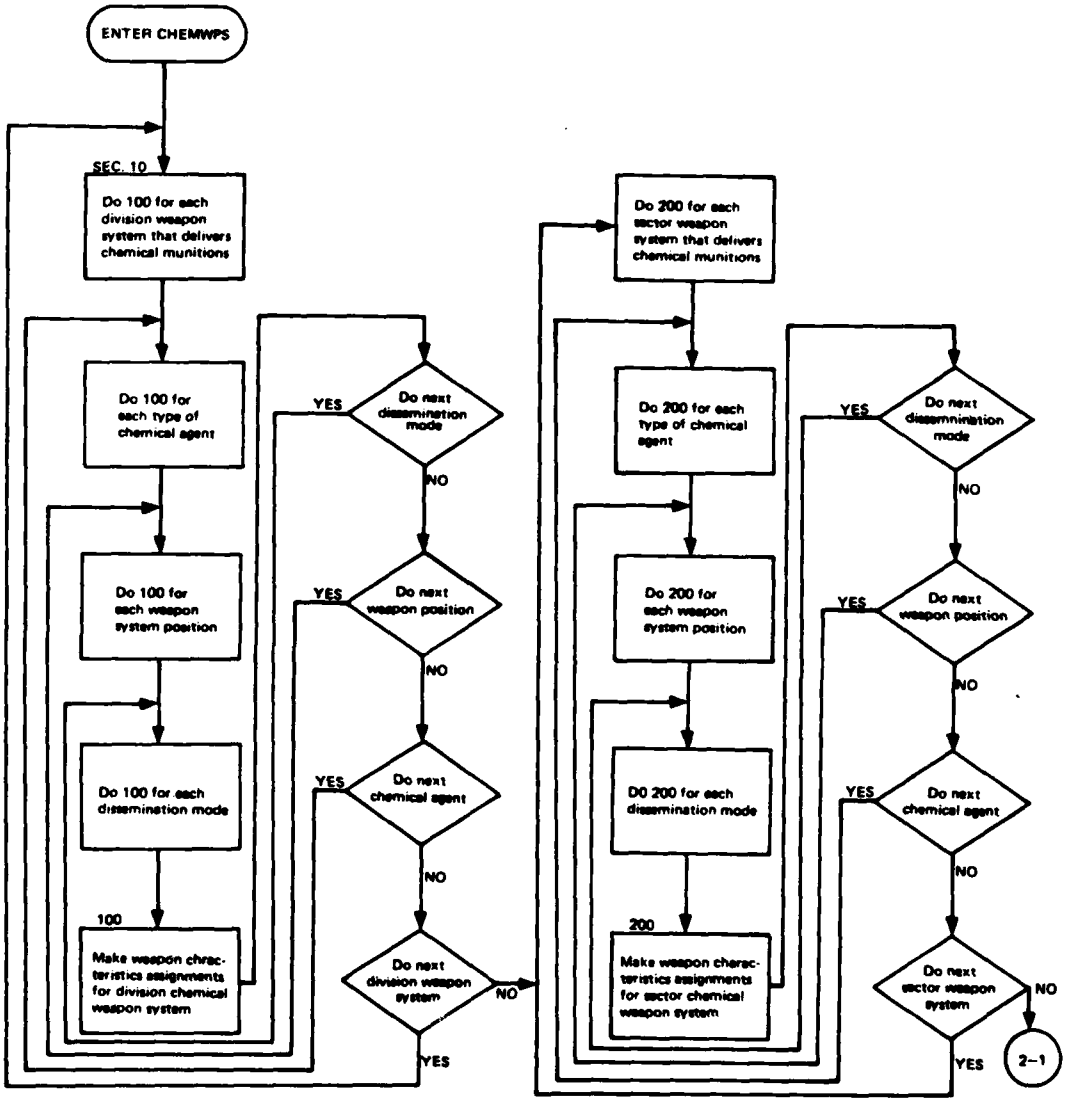


Figure 95. Flowchart of TACWAR Routine CHEMWPS (Part 1 of 2)

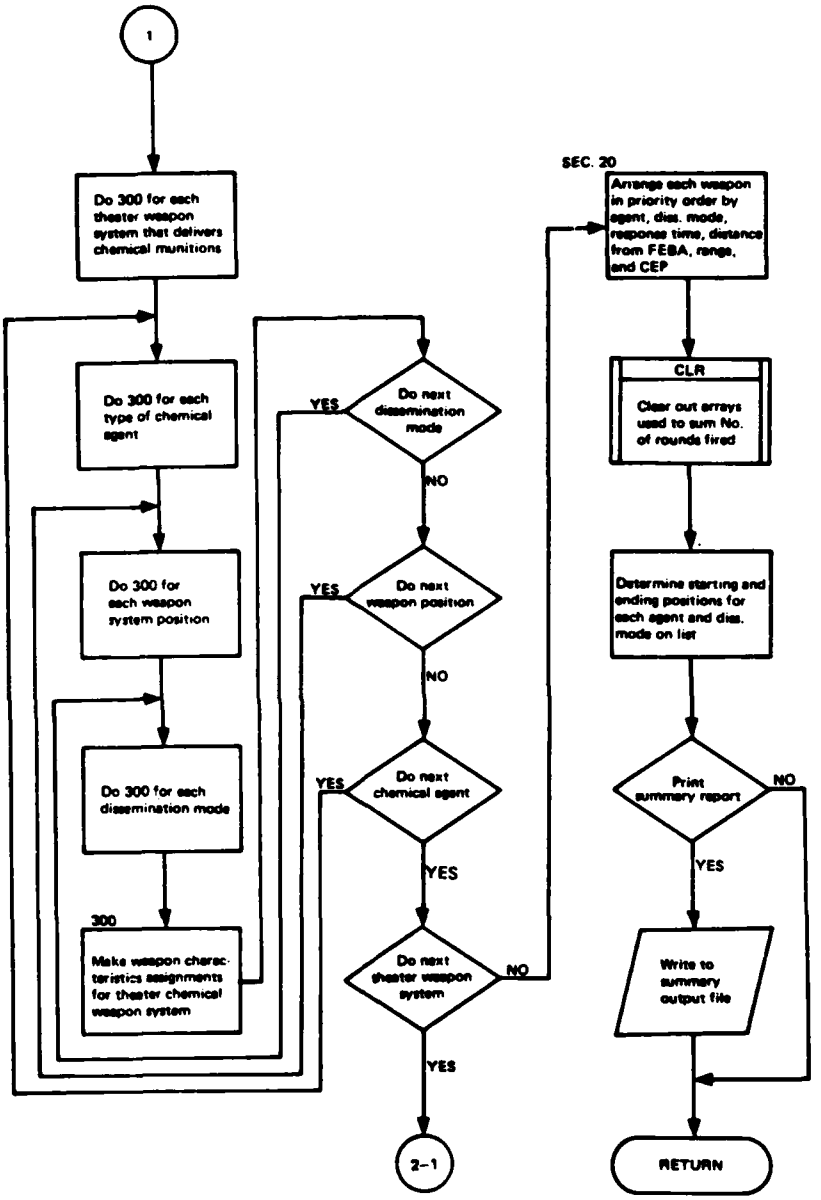


Figure 95. Flowchart of TACWAR Routine CHEMWPS (Part 2 of 2)

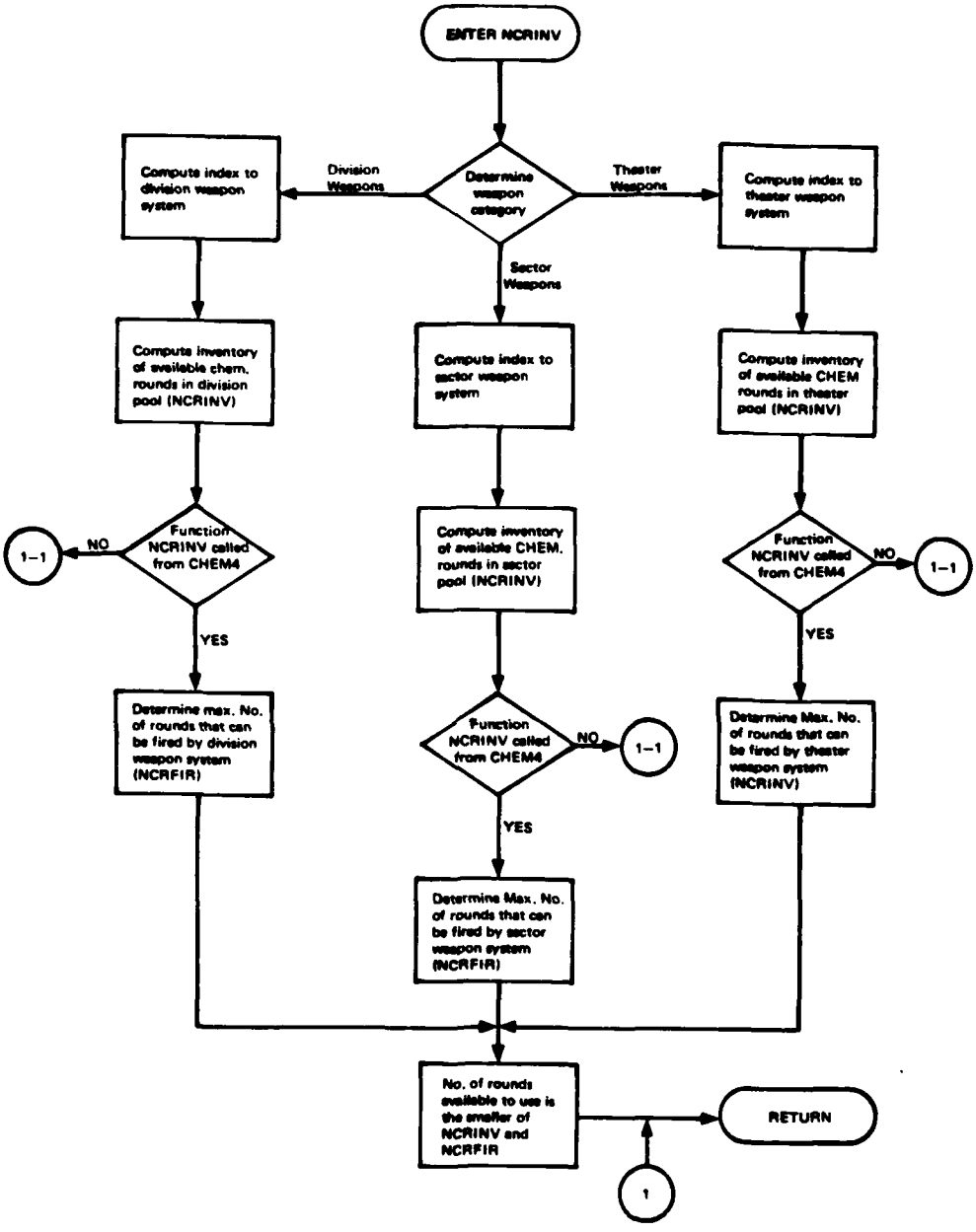


Figure 96. Flowchart of TACWAR Routine NCRINV

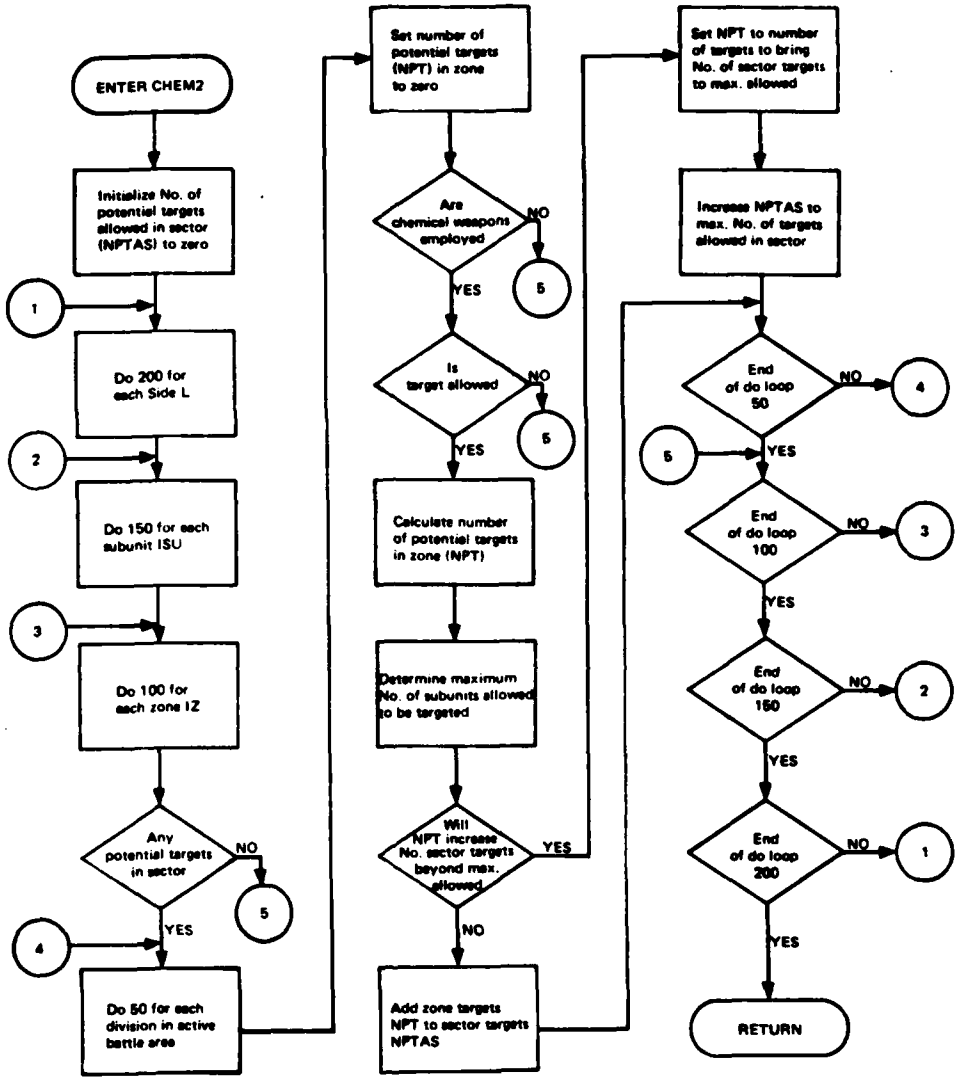


Figure 97. Flowchart of TACWAR Routine CHEM2

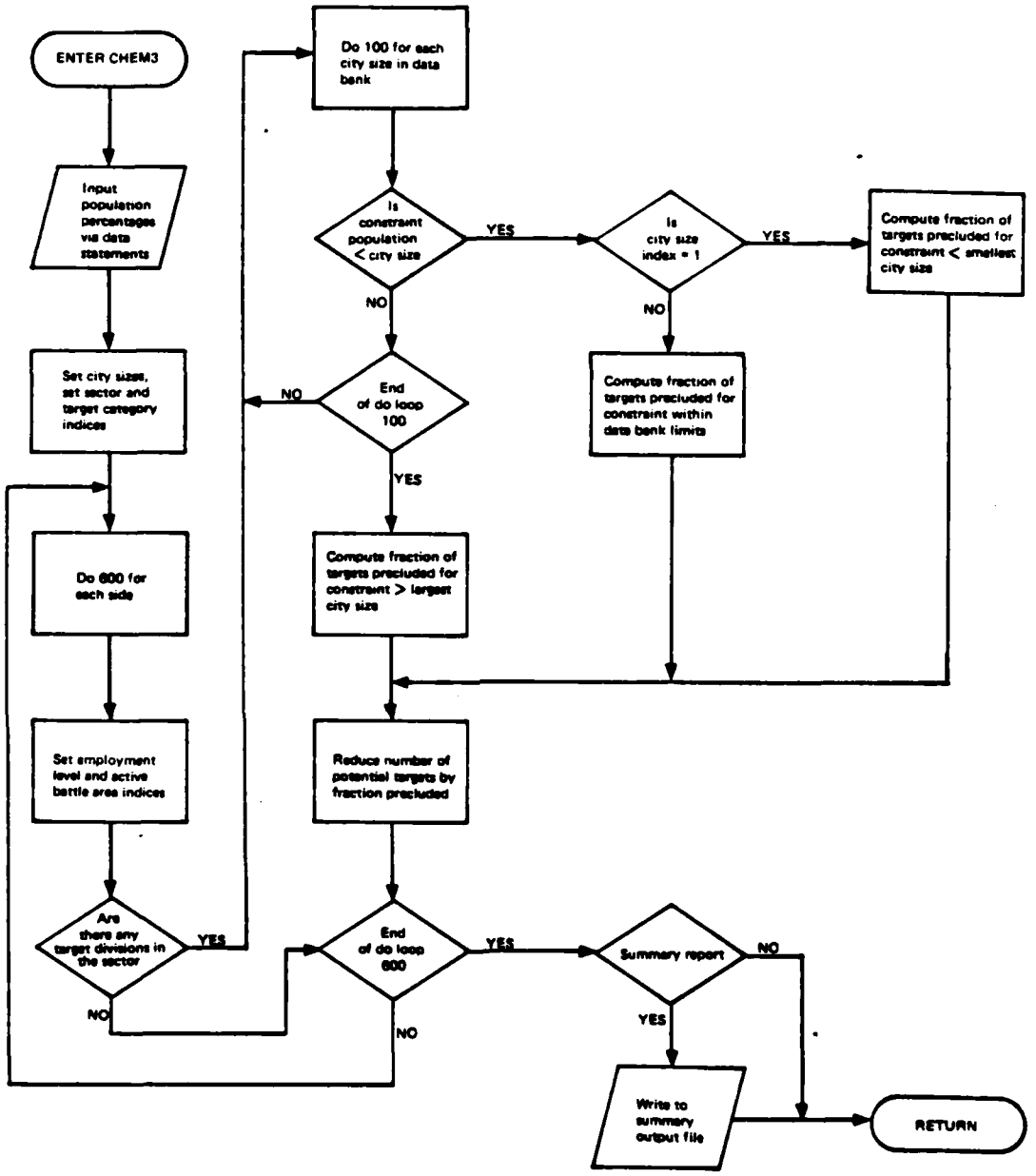


Figure 98. Flowchart of TACWAR Routine CHEM3

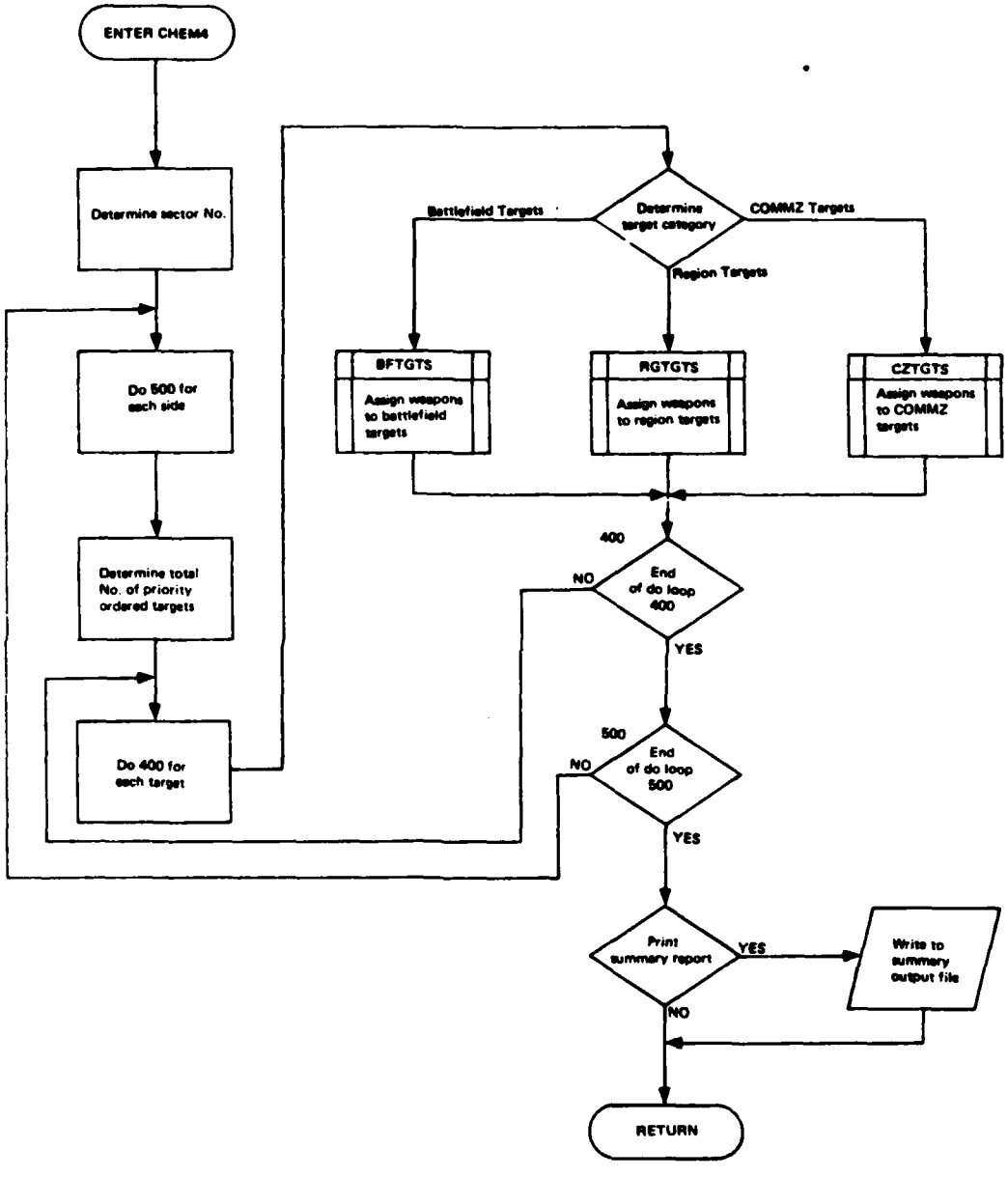


Figure 99. Flowchart of TACWAR Routine CHEM4

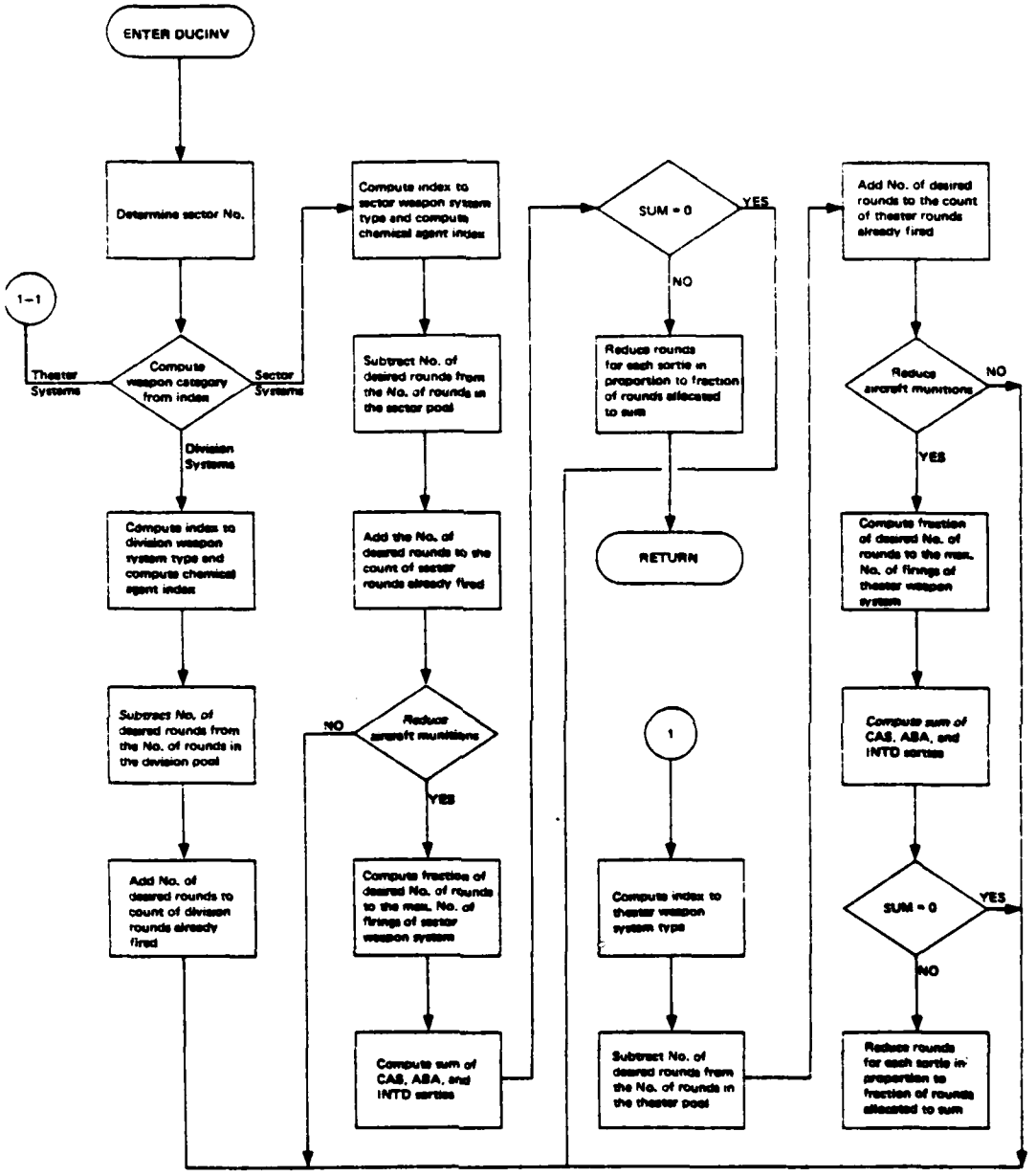


Figure 100. Flowchart of TACWAR Routine DUCINV

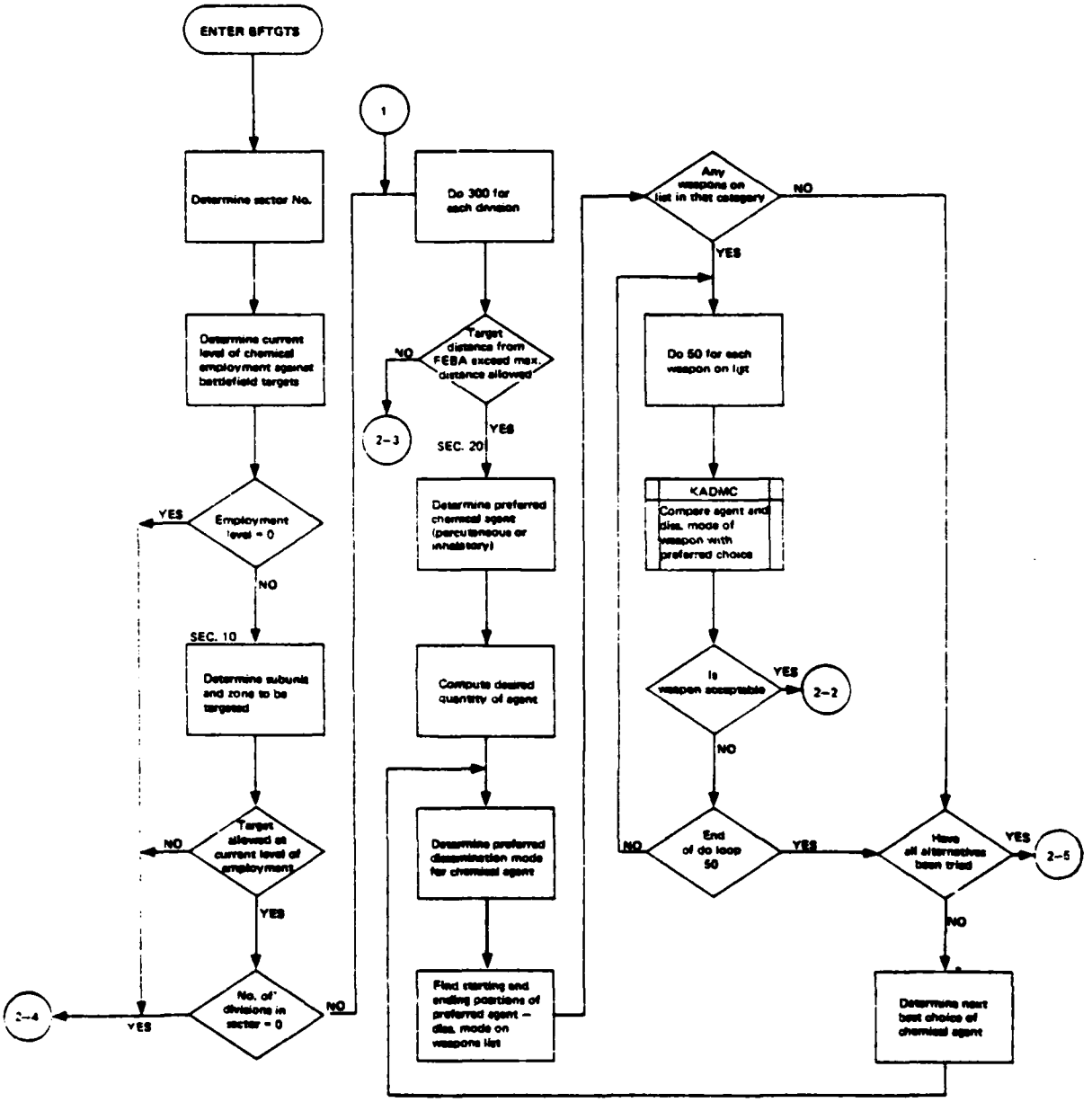


Figure 101. Flowchart of TACWAR Routine BFTGTS (Part 1 of 2)

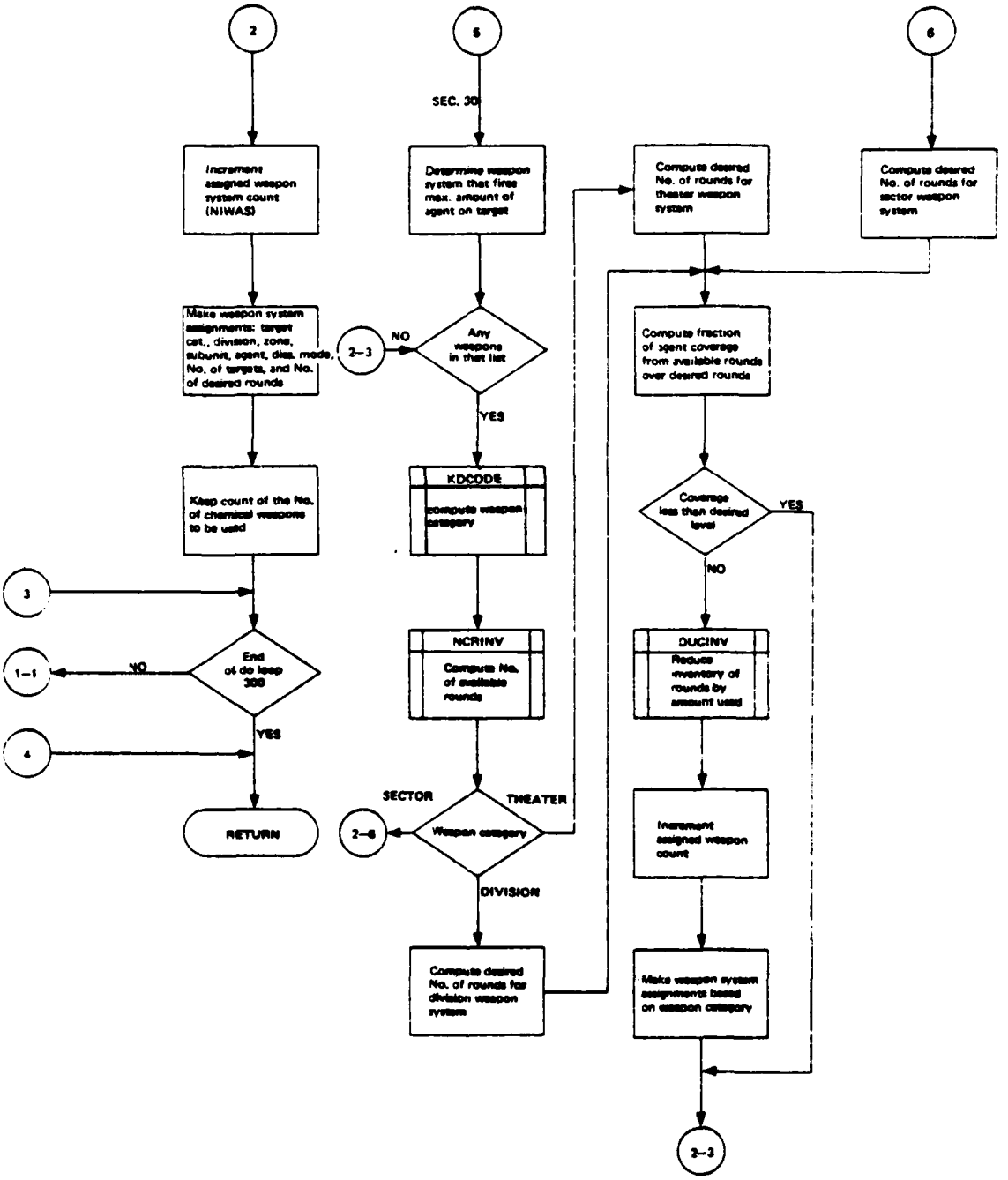


Figure 101. Flowchart of TACWAR Routine BFTGTS (Part 2 of 2)

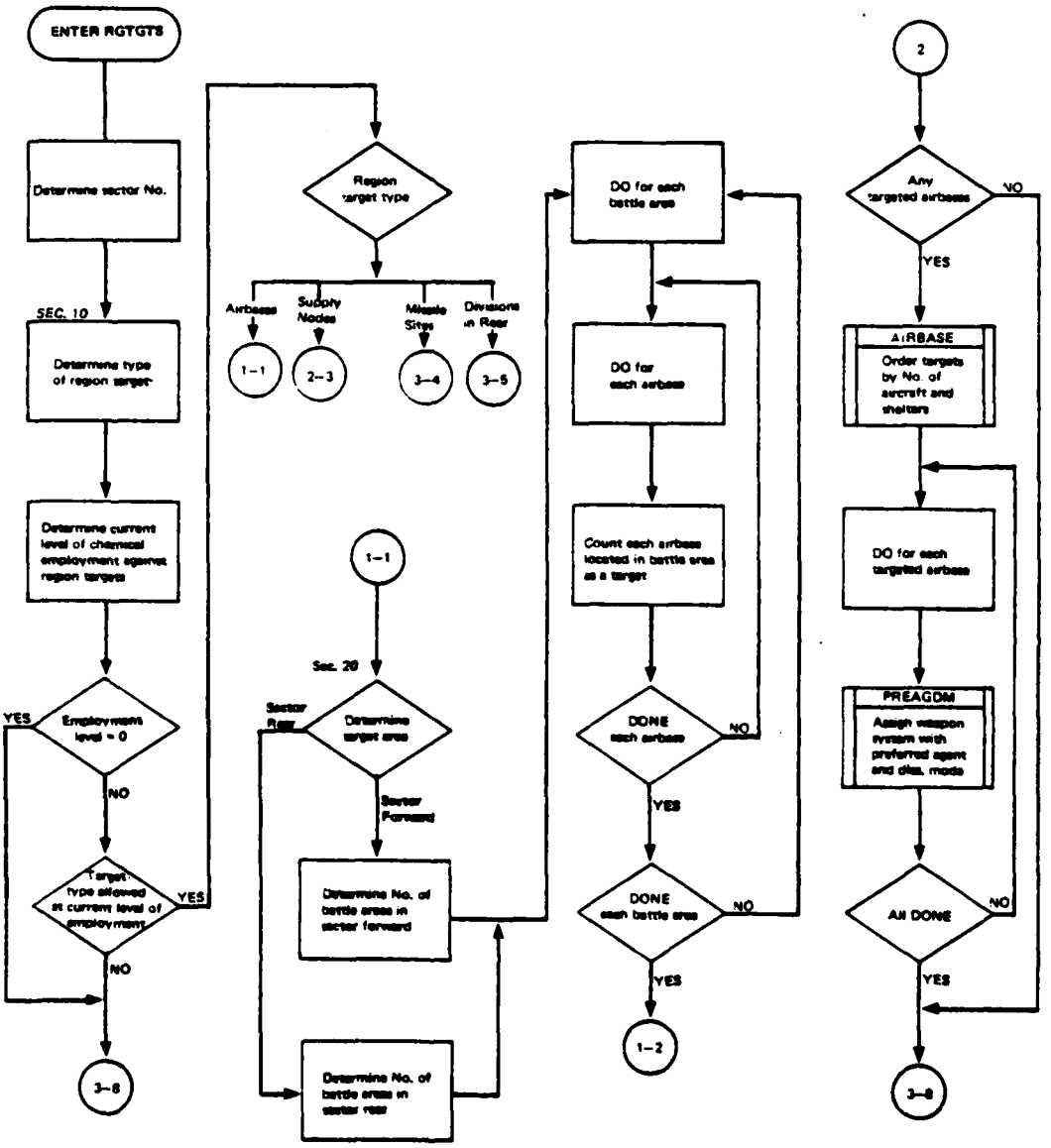


Figure 102. Flowchart of TACWAR Routine RGTGTS (Part 1 of 3)

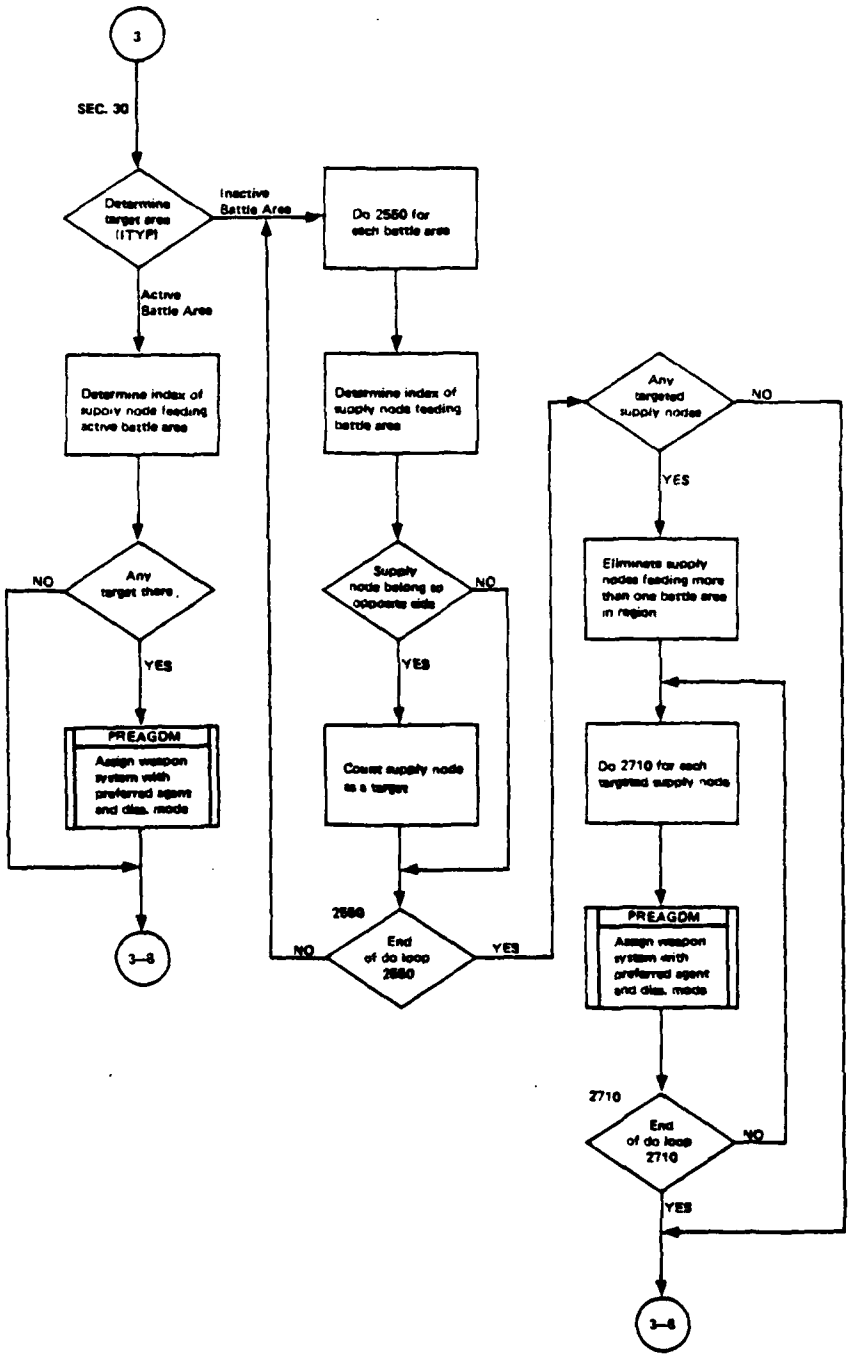


Figure 102. Flowchart of TACWAR Routine RGTGTS (Part 2 of 3)

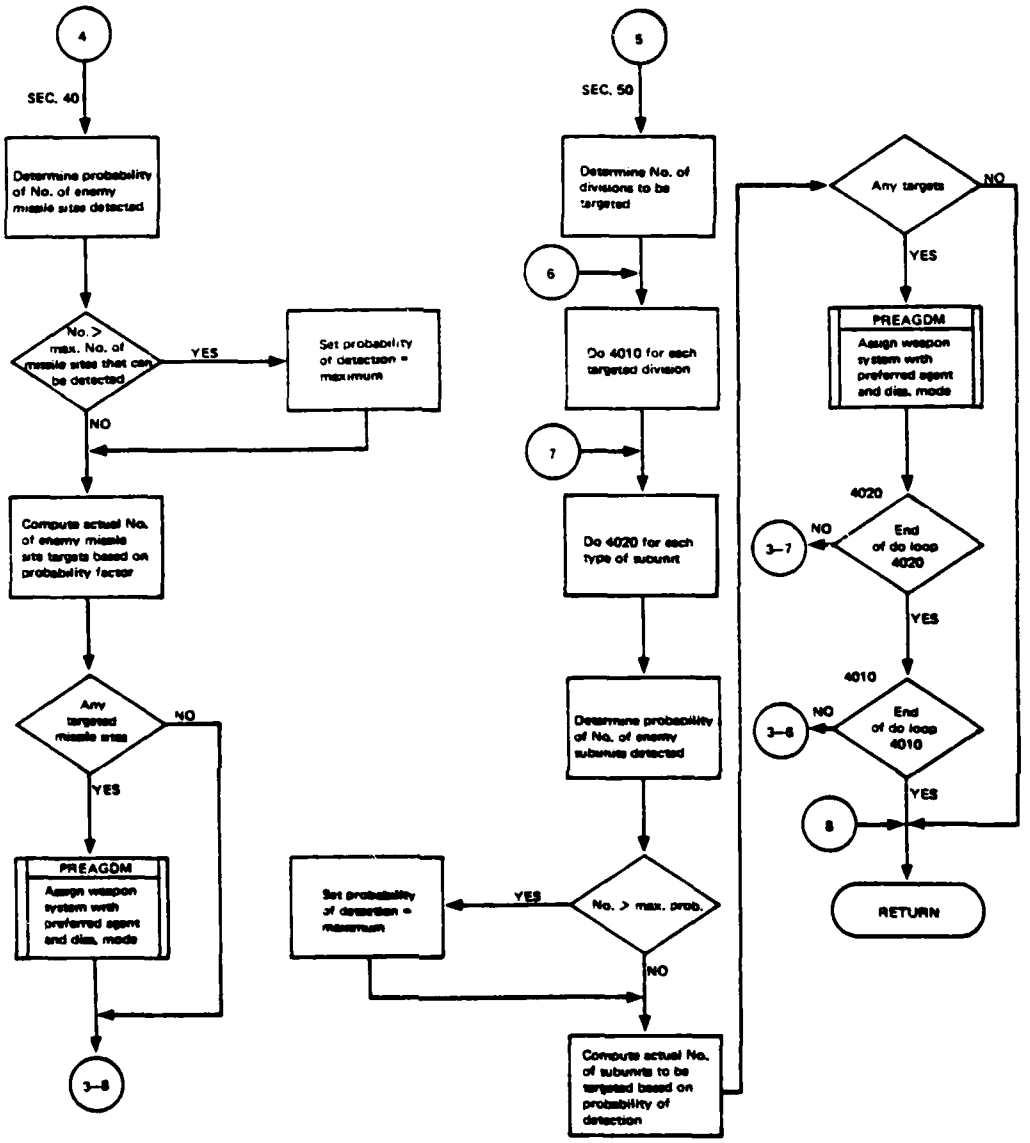


Figure 102. Flowchart of TACWAR Routine RGTGTS (Part 3 of 3)

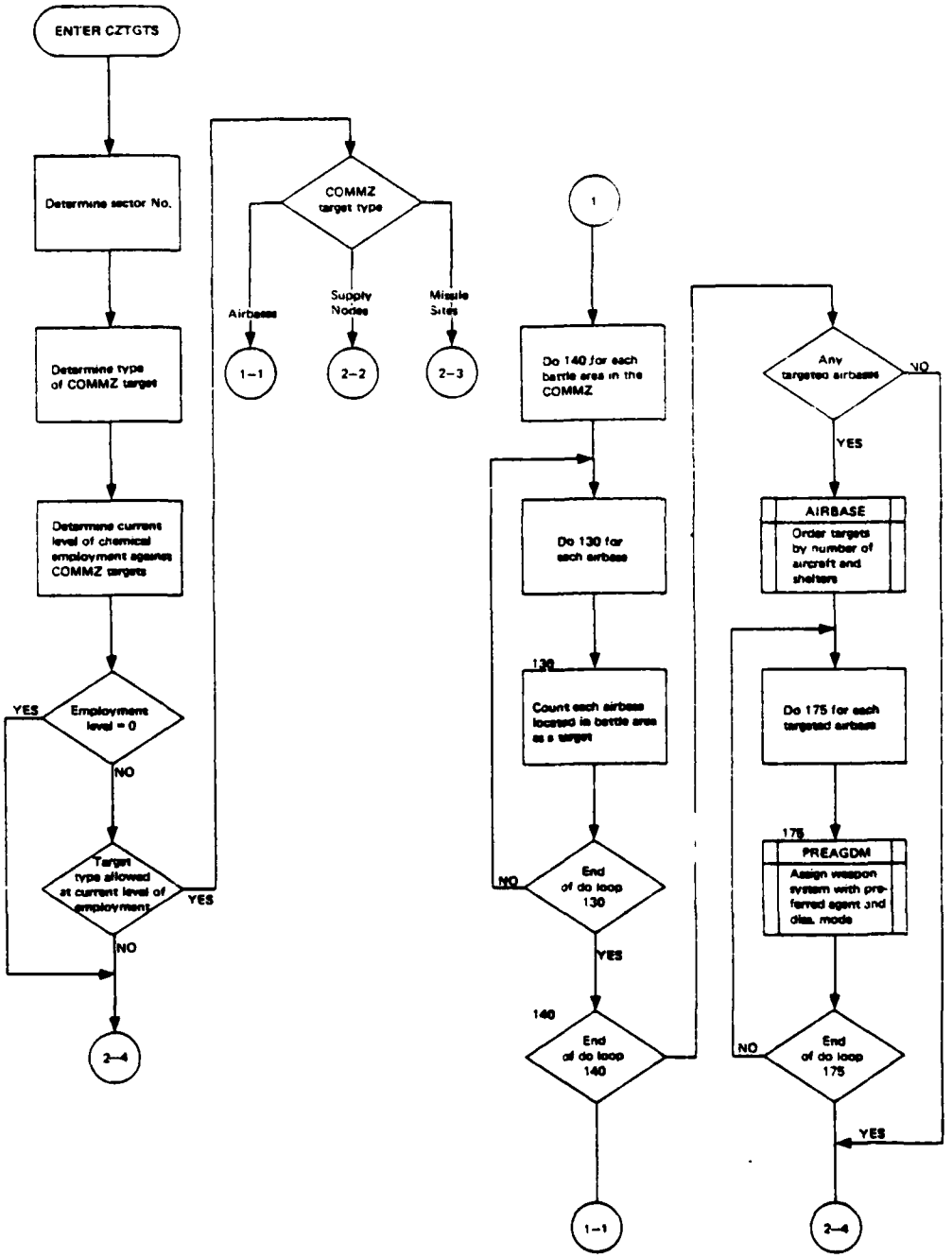


Figure 103. Flowchart of TACWAR Routine CZTGTS (Part 1 of 2)

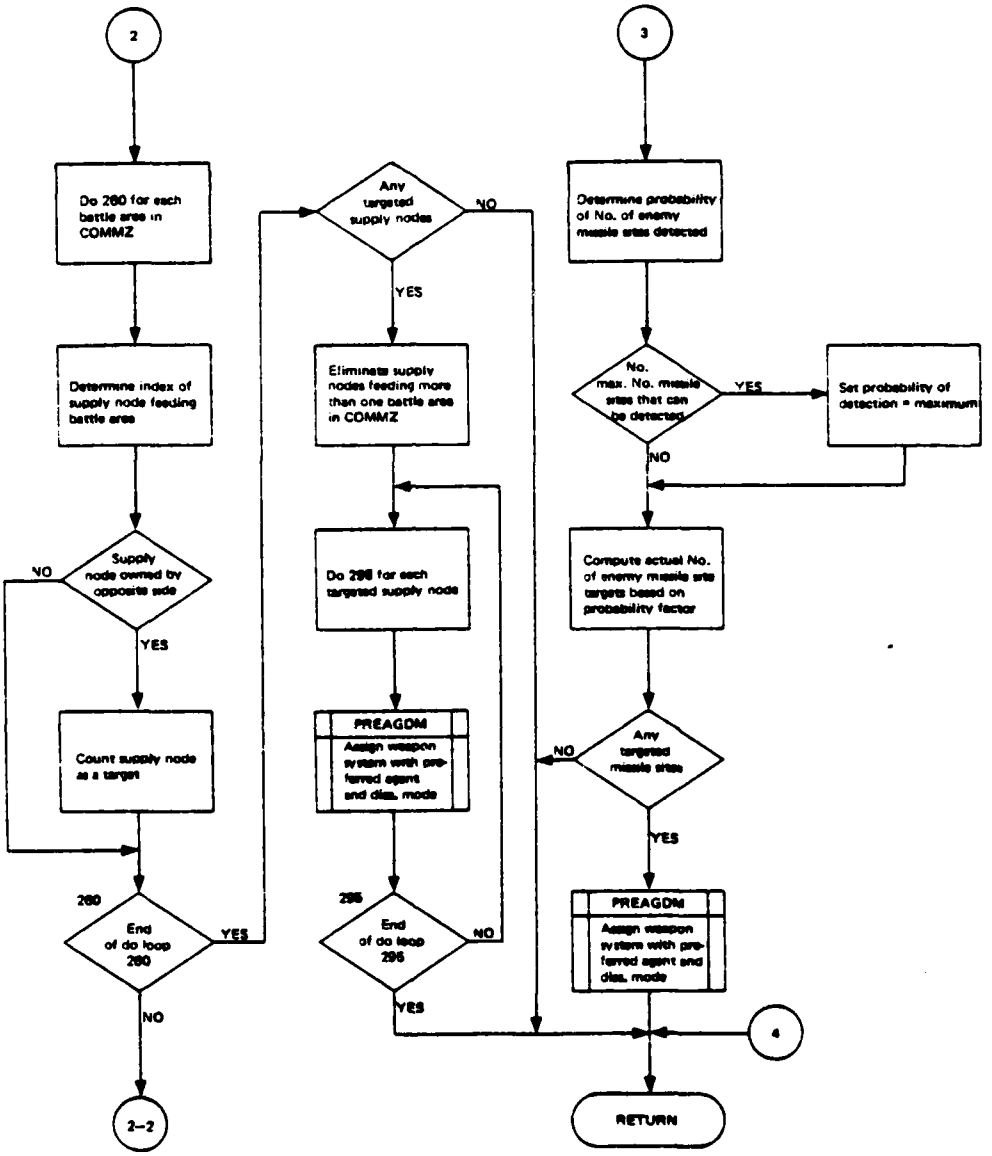


Figure 103. Flowchart of TACWAR Routine CZTGTS (Part 2 of 2)

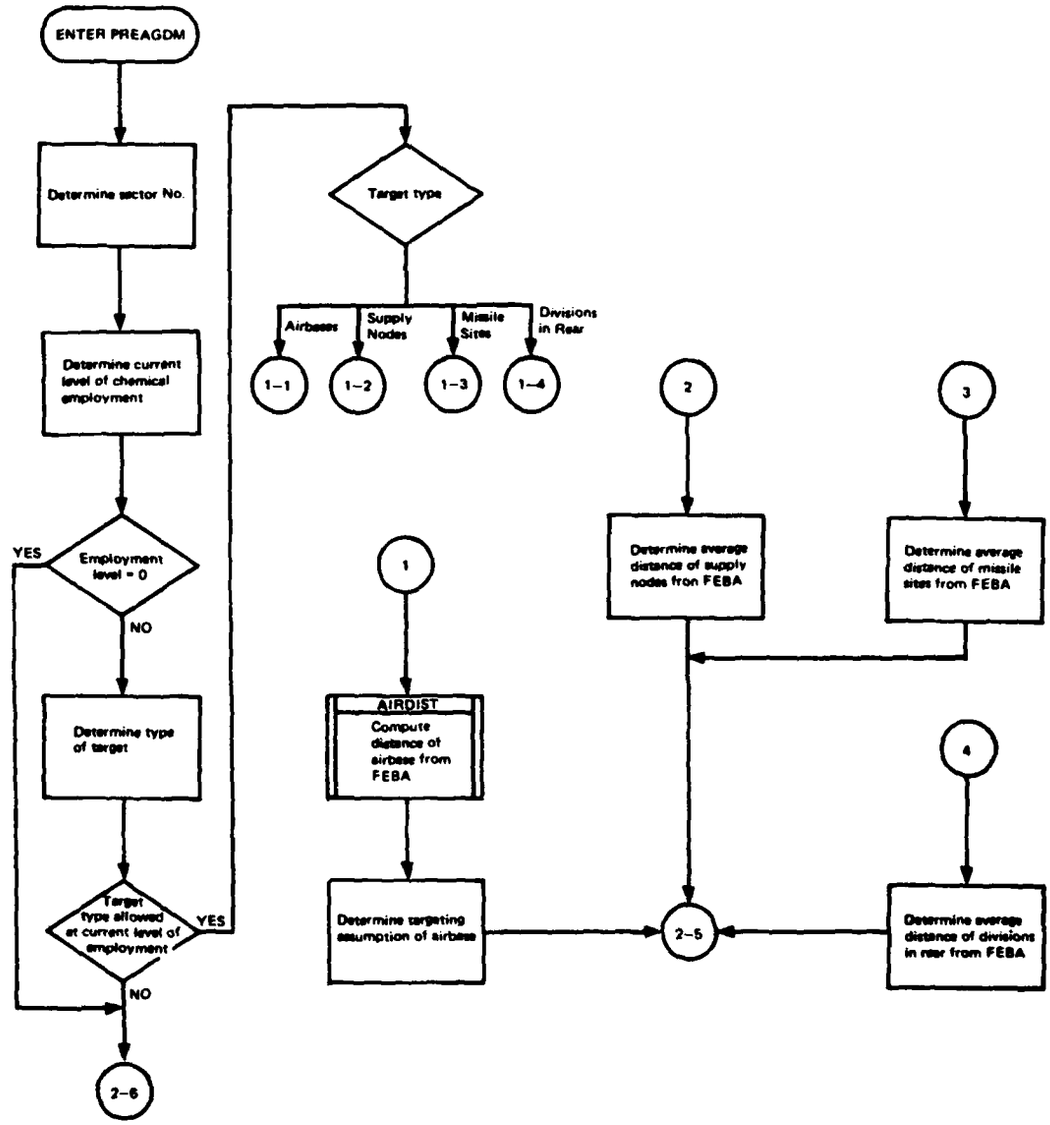


Figure 104. Flowchart of TACWAR Routine PREAGDM (Part 1 of 3)

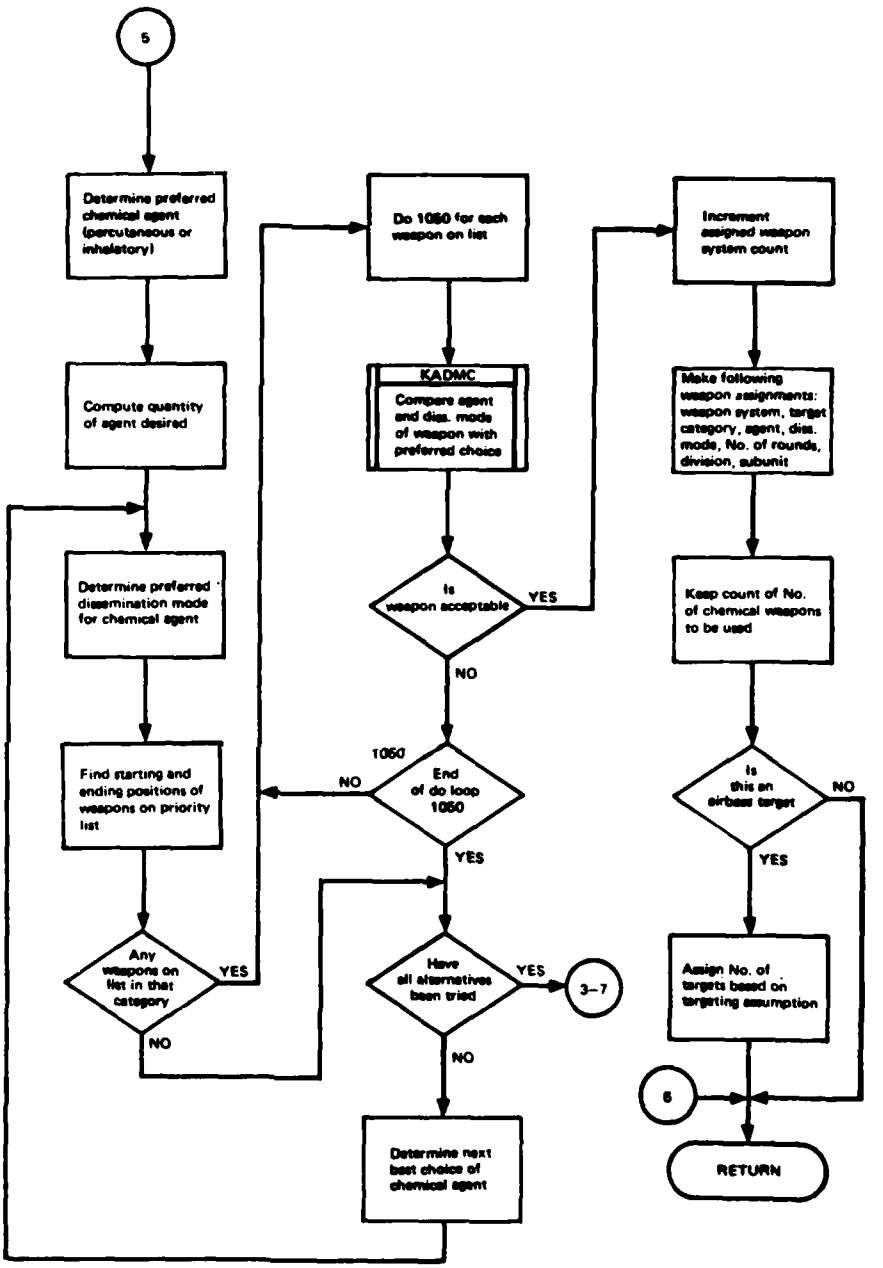


Figure 104. Flowchart of TACWAR Routine PREAGDM (Part 2 of 3)

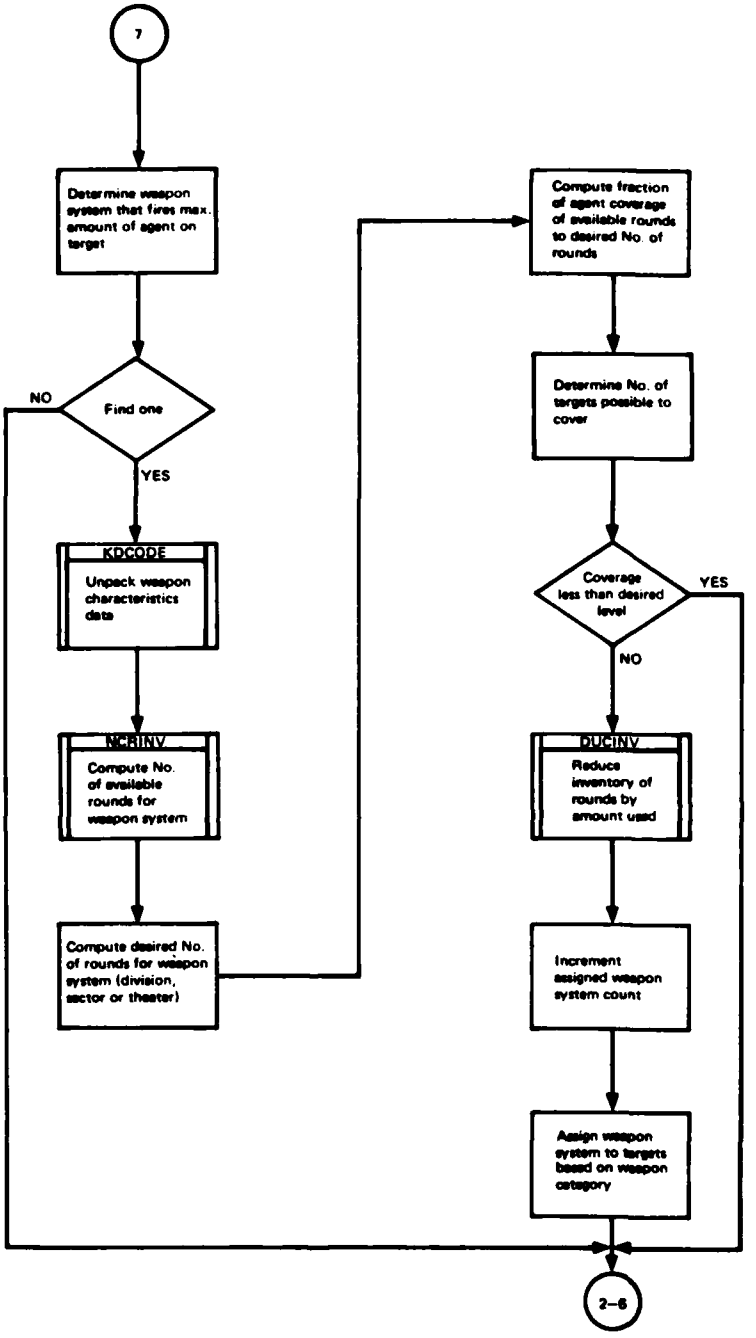


Figure 104. Flowchart of TACWAR Routine PREAGDM (Part 3 of 3)

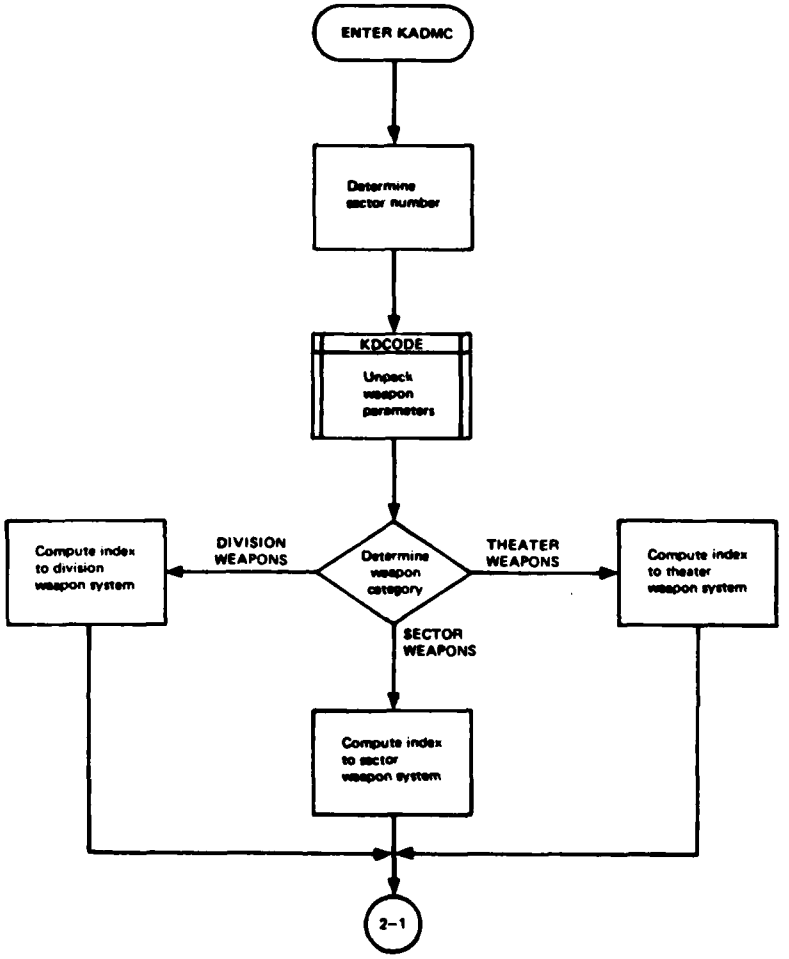


Figure 105. Flowchart of TACWAR Routine KADMC (Part 1 of 2)

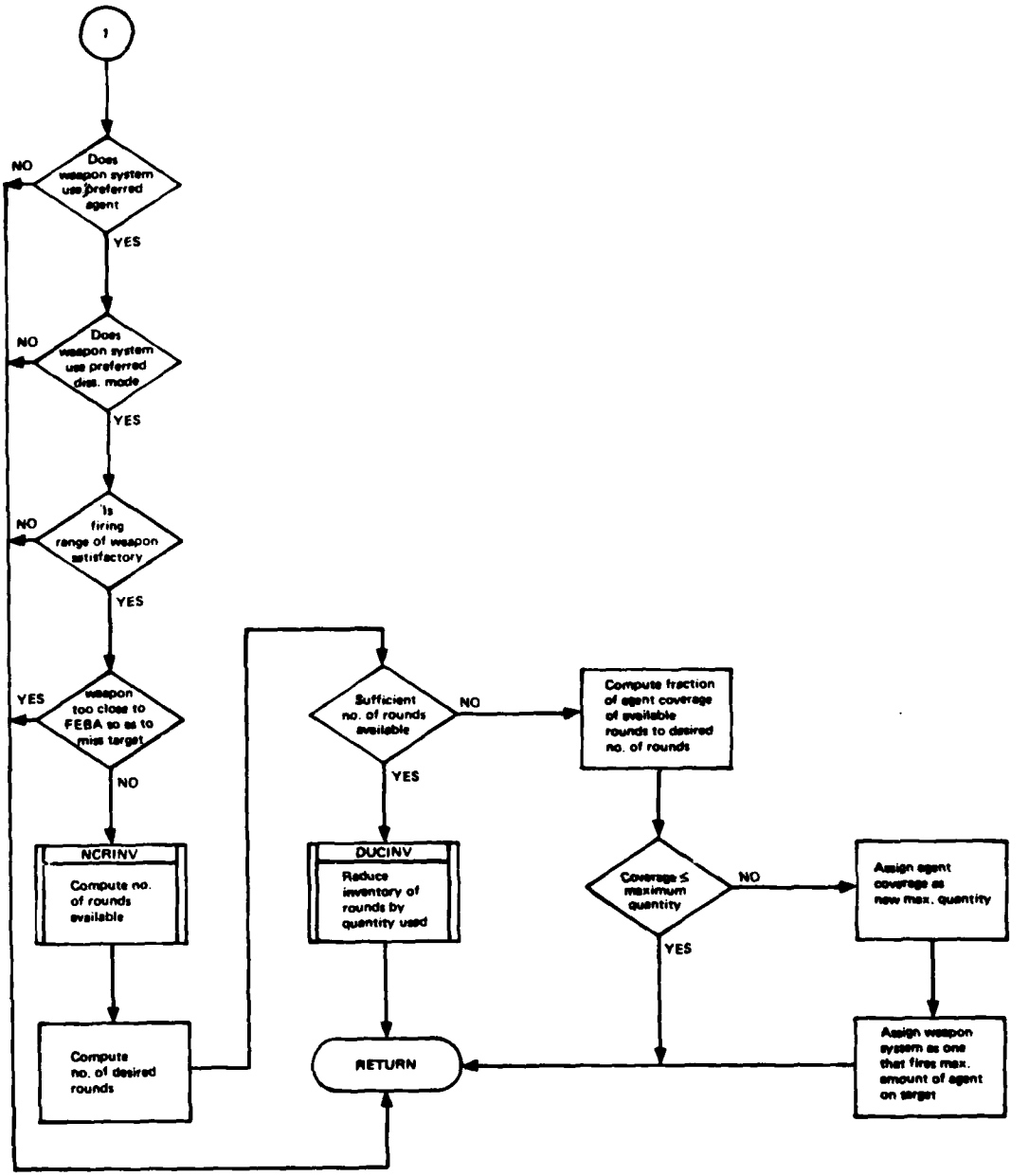


Figure 105. Flowchart of TACWAR Routine KADMC (Part 2 of 2)

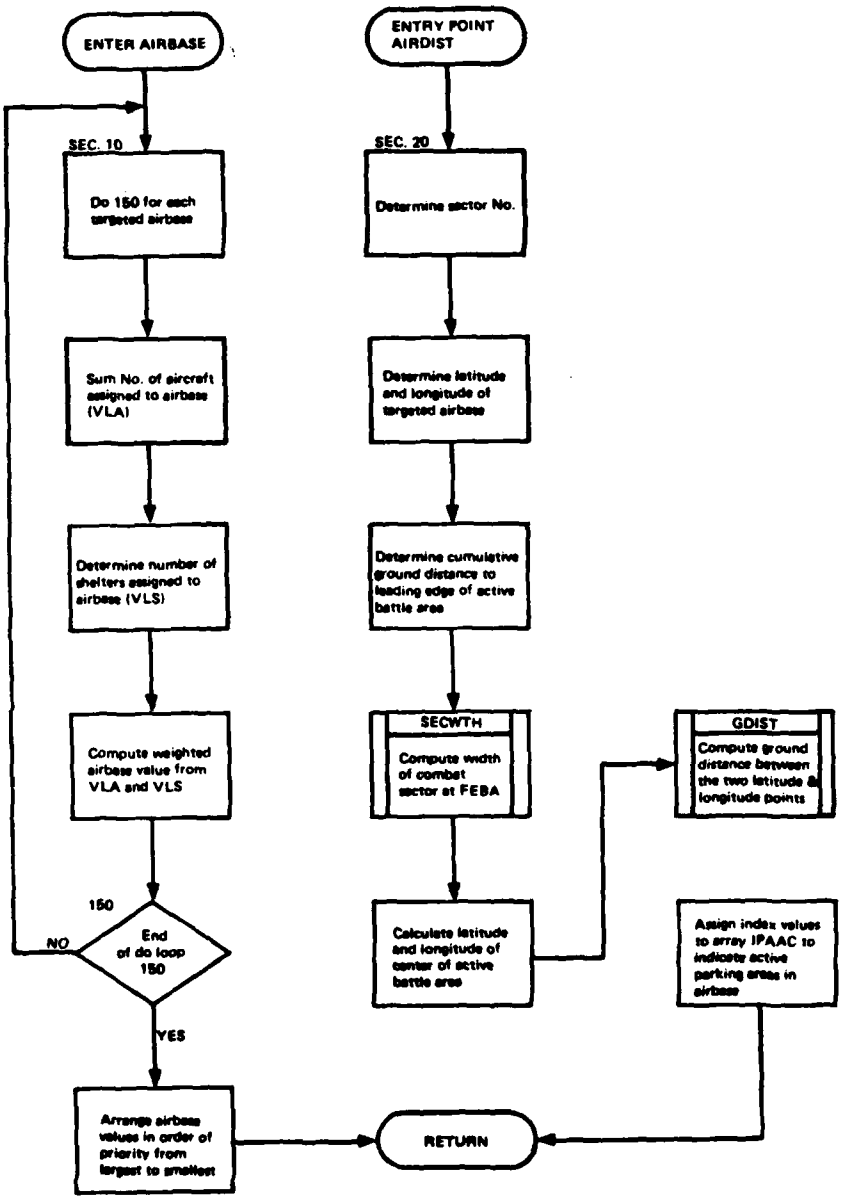


Figure 106. Flowchart of TACWAR Routine AIRBASE

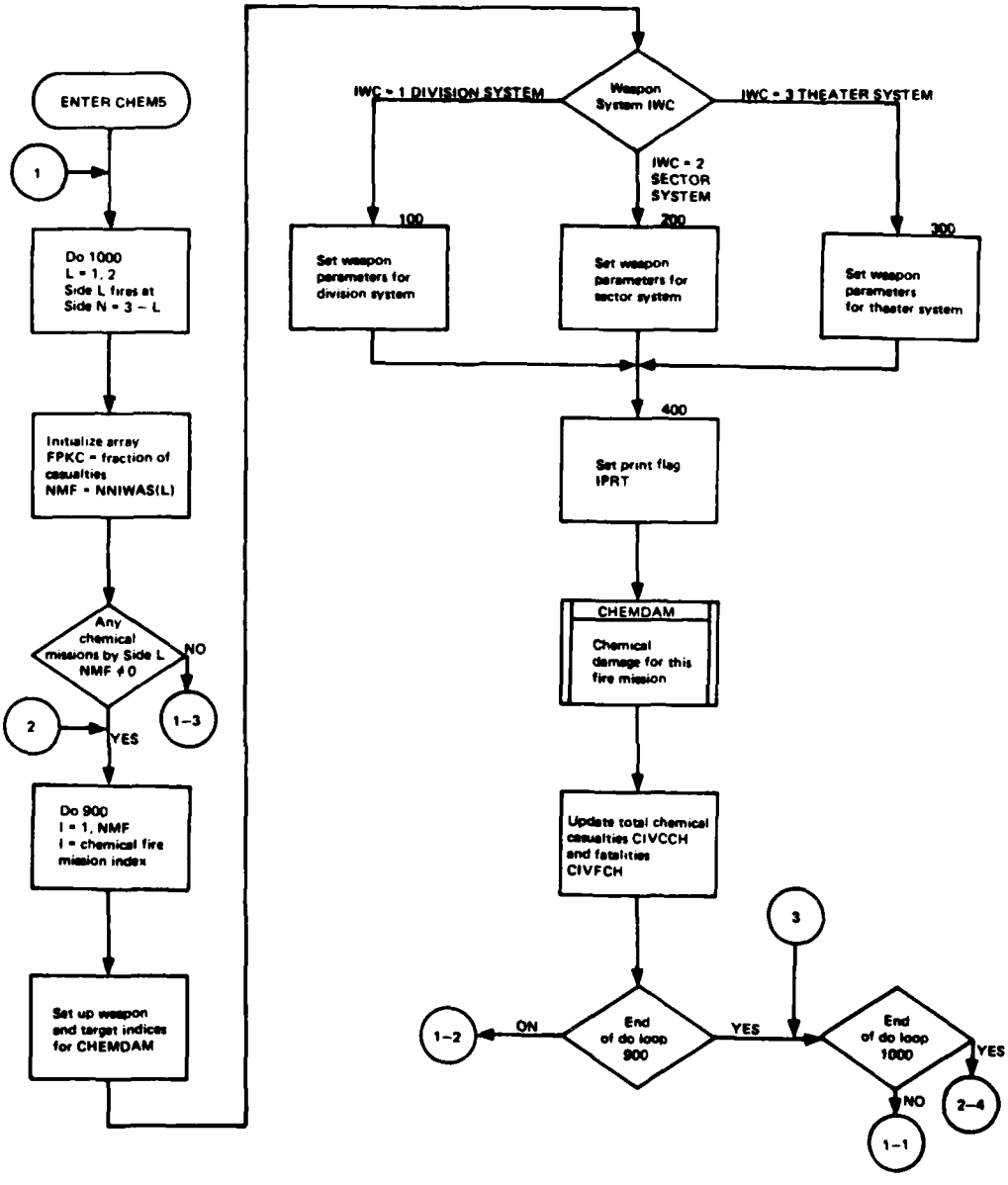


Figure 107. Flowchart of TACWAR Routine CHEM5
(Part 1 of 2)

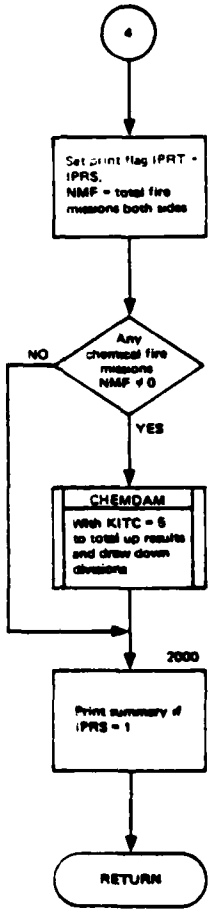


Figure 107. Flowchart of TACWAR Routine CHEM5 (Part 2 of 2)

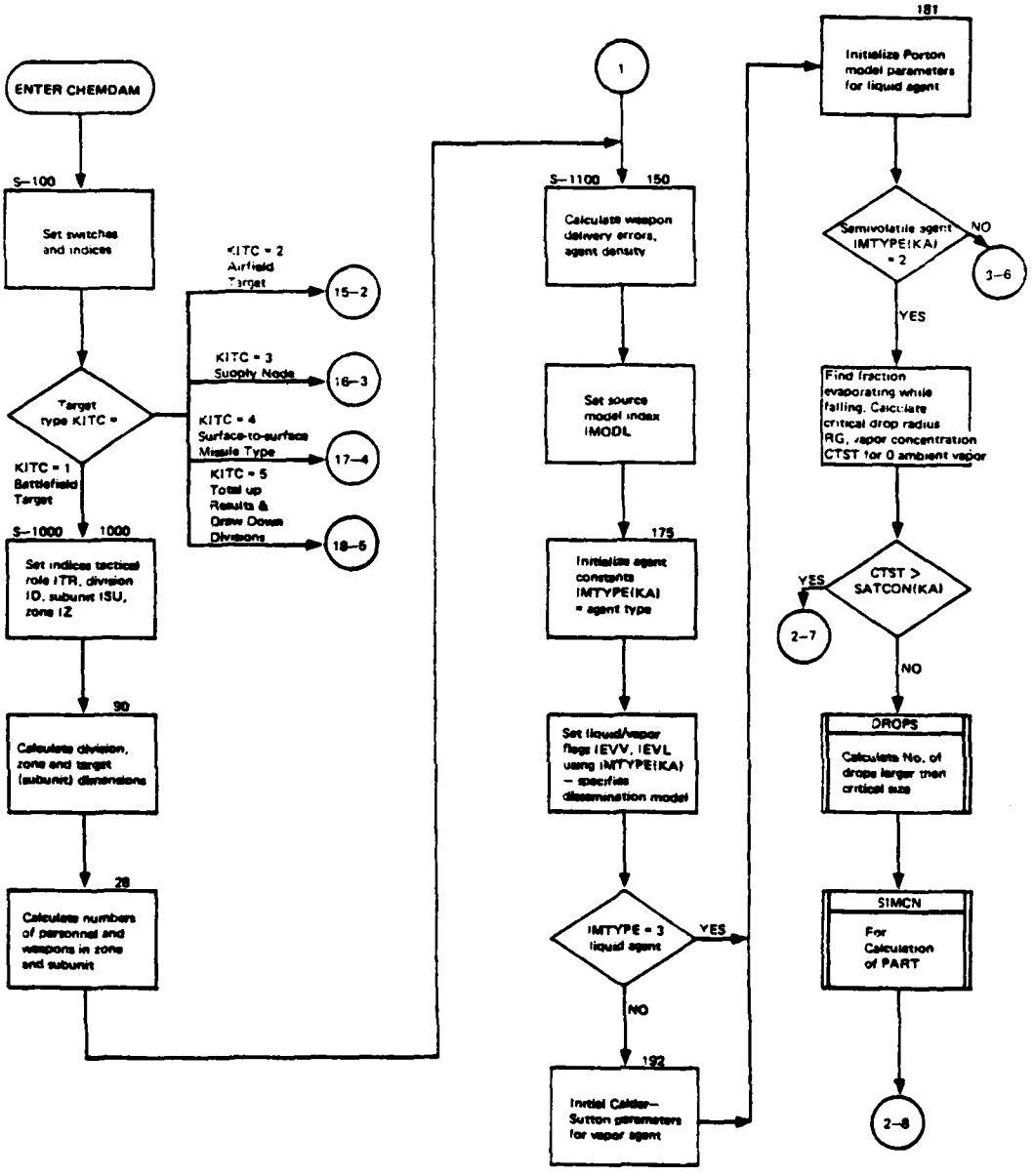


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 1 of 18)

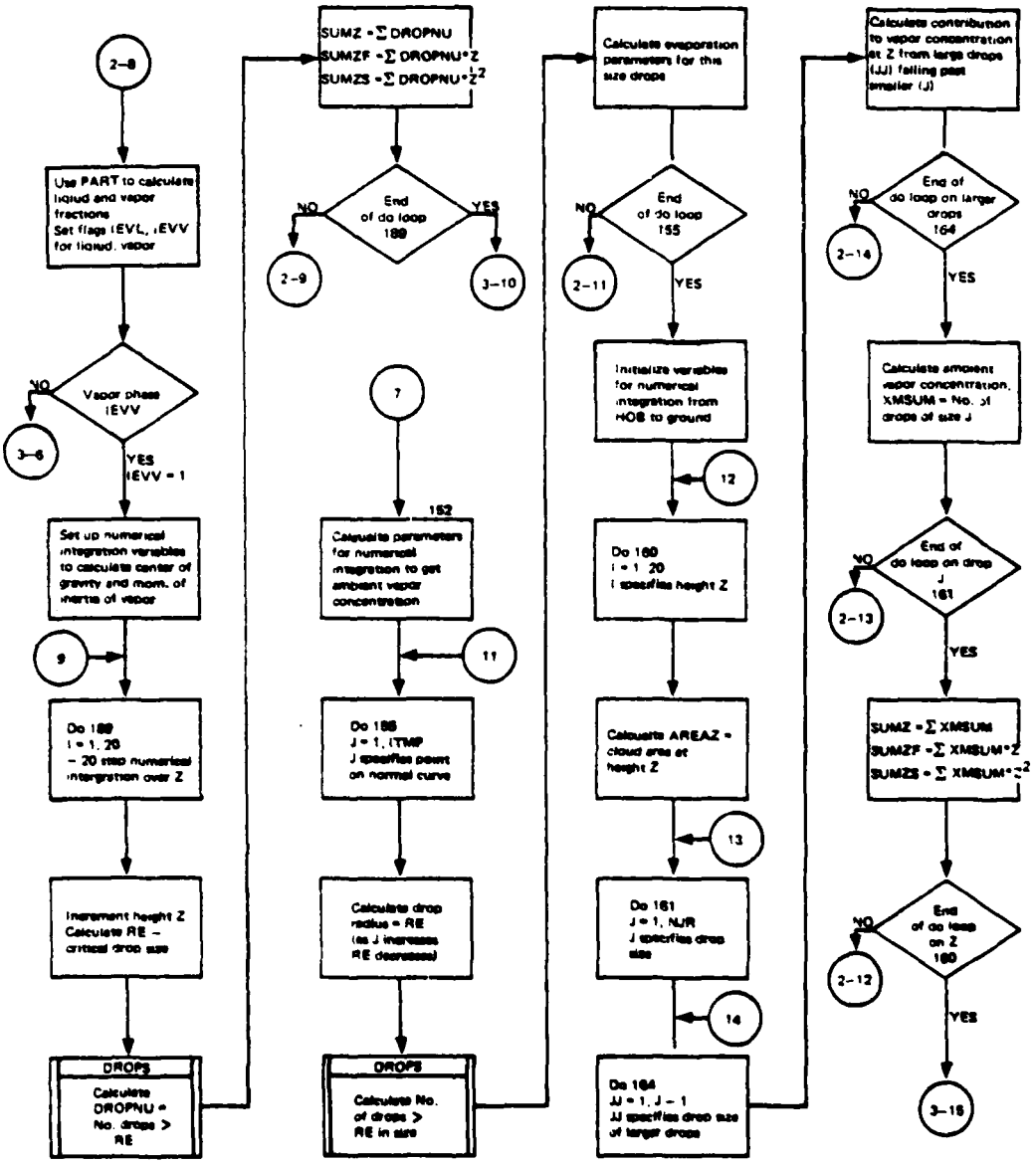


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 2 of 18)

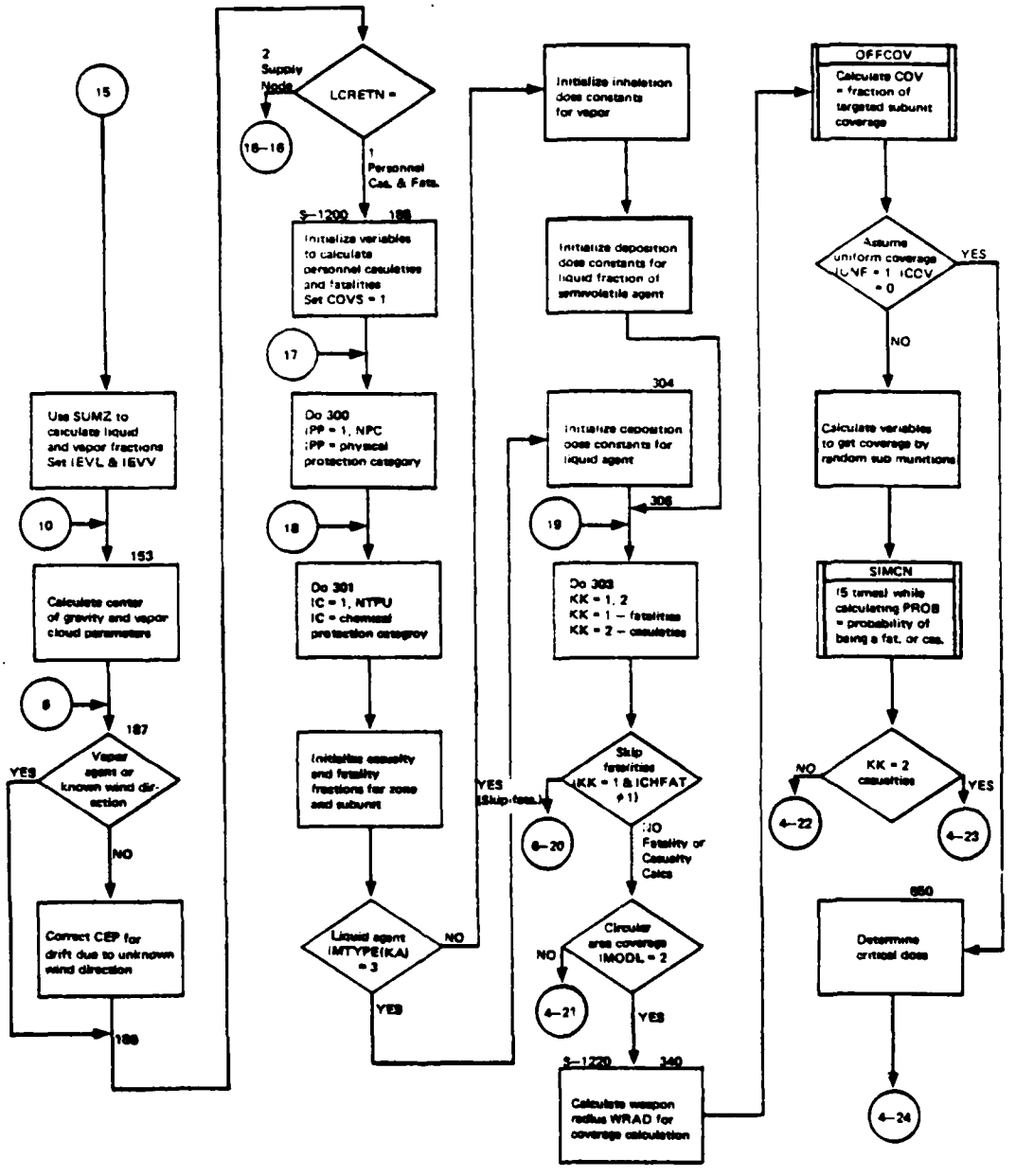


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 3 of 18)

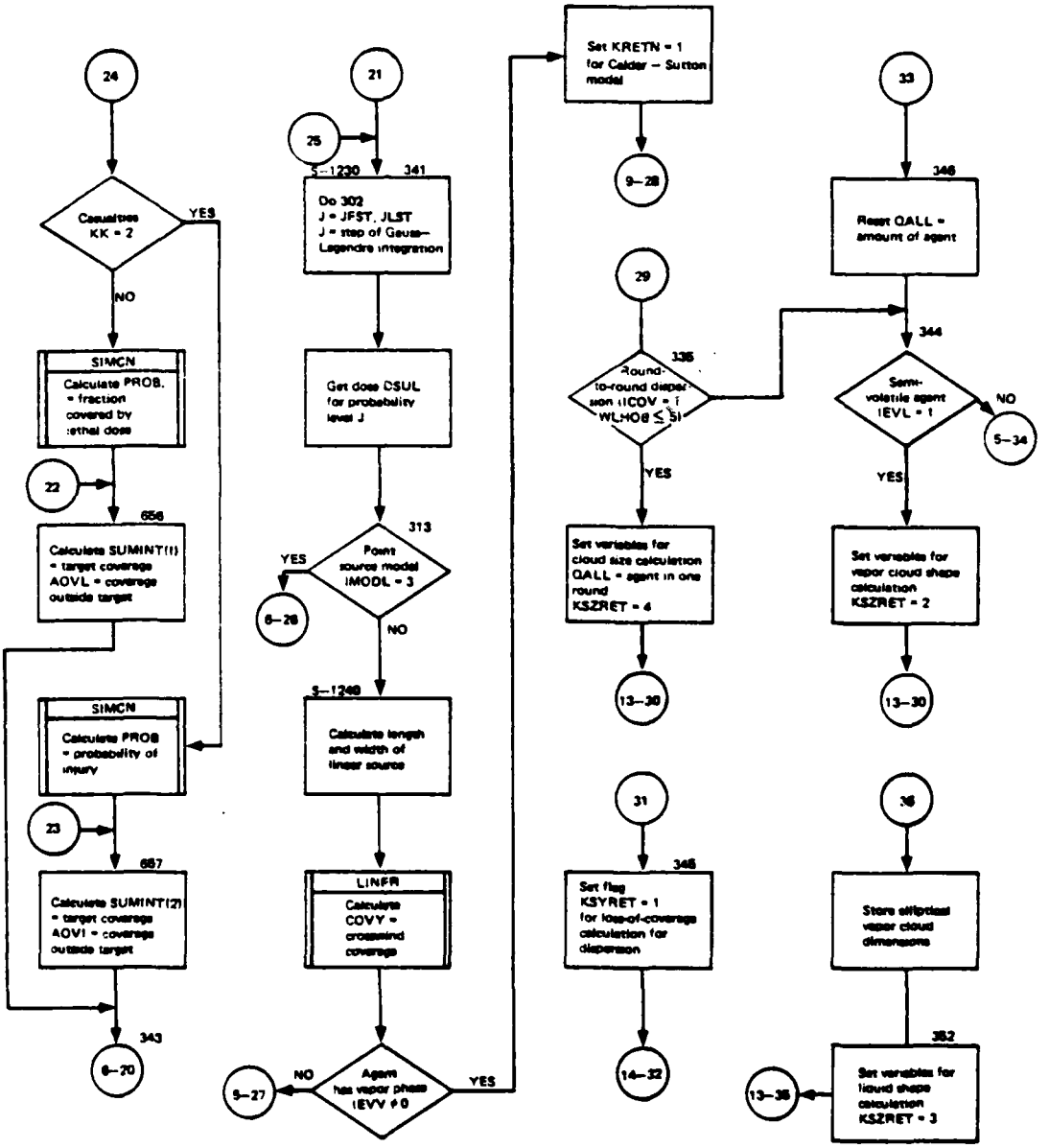


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 4 of 18)

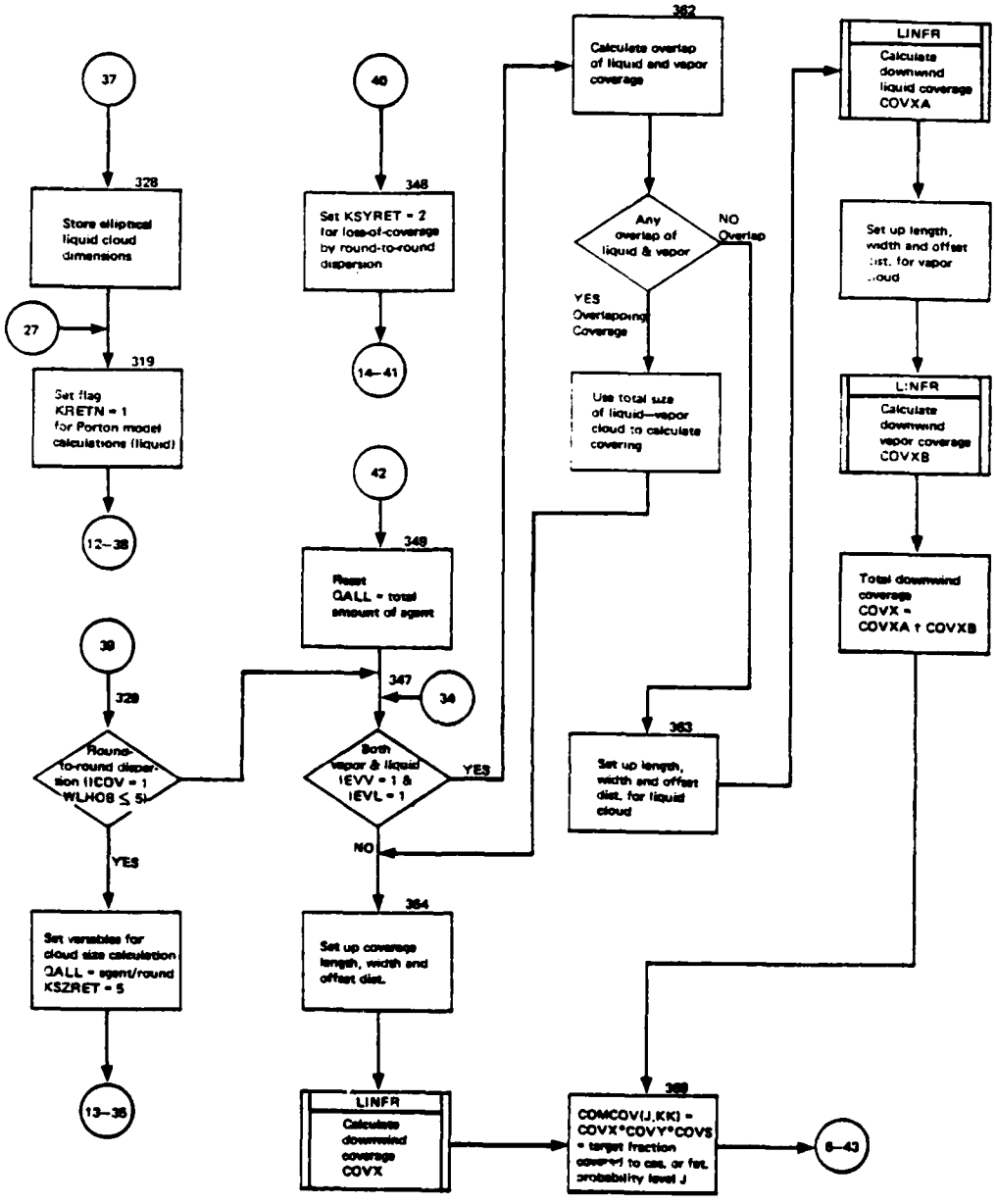


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 5 of 18)

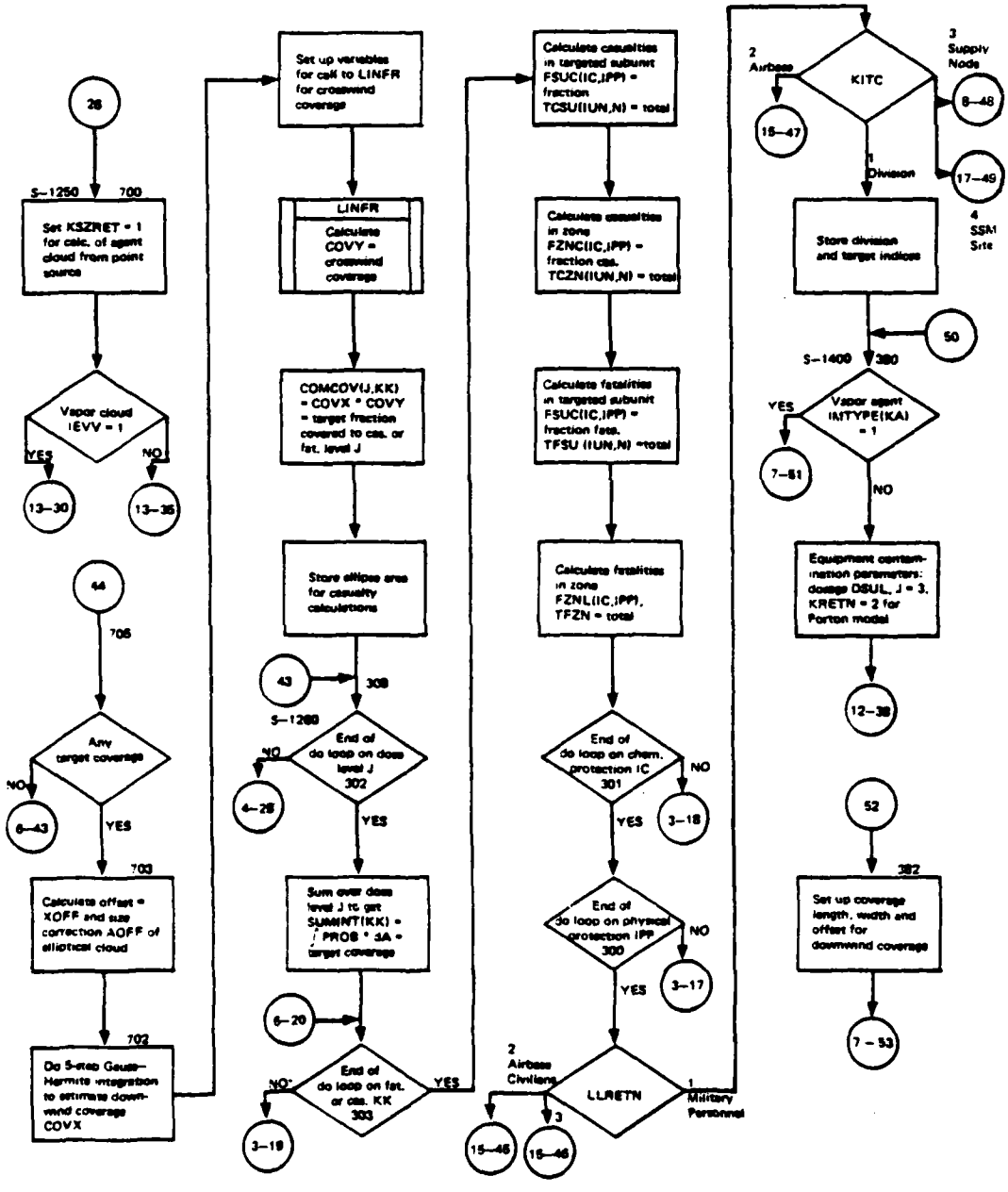


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 6 of 18)

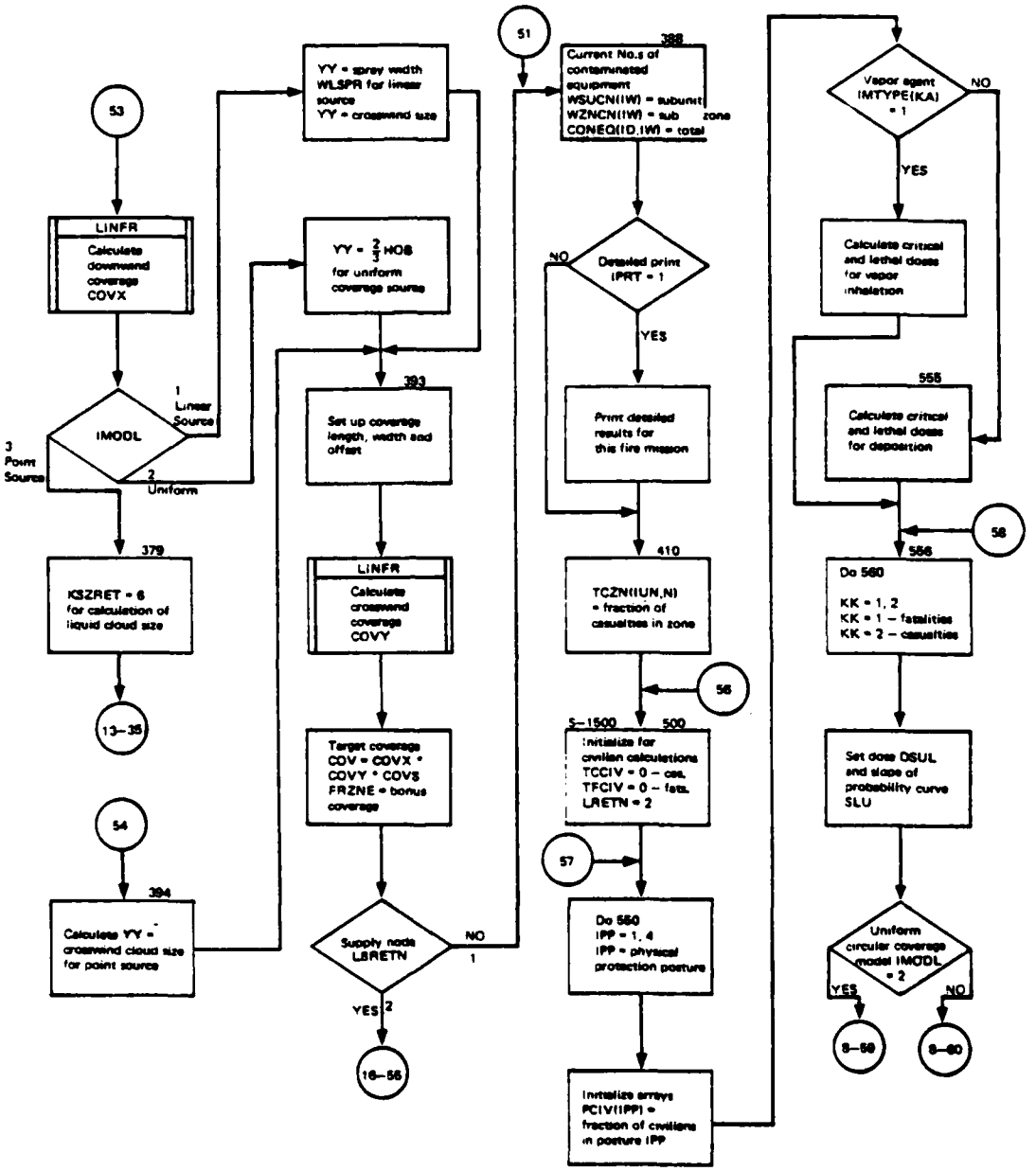


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 7 of 18)

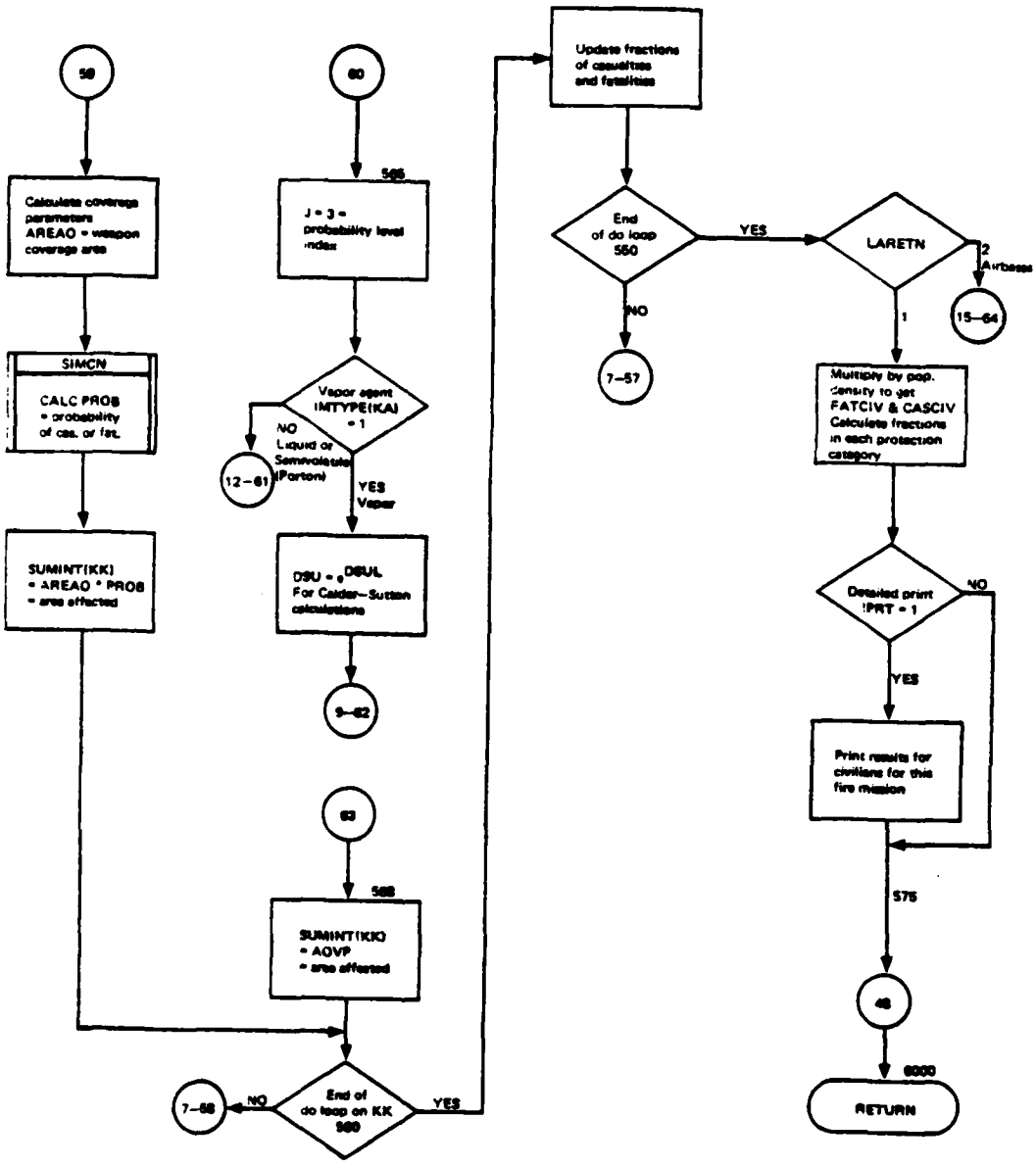


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 8 of 18)

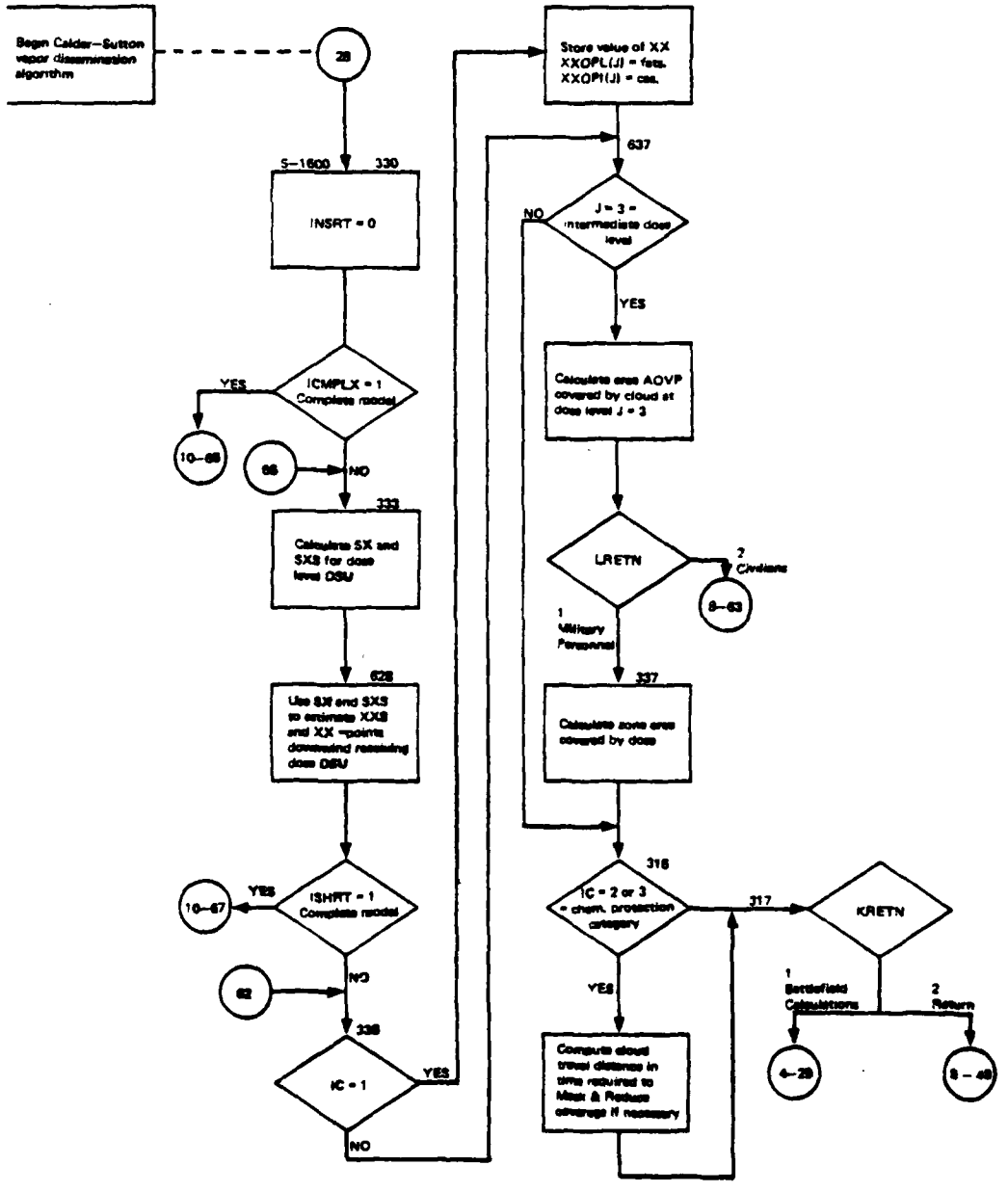


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 9 of 18)

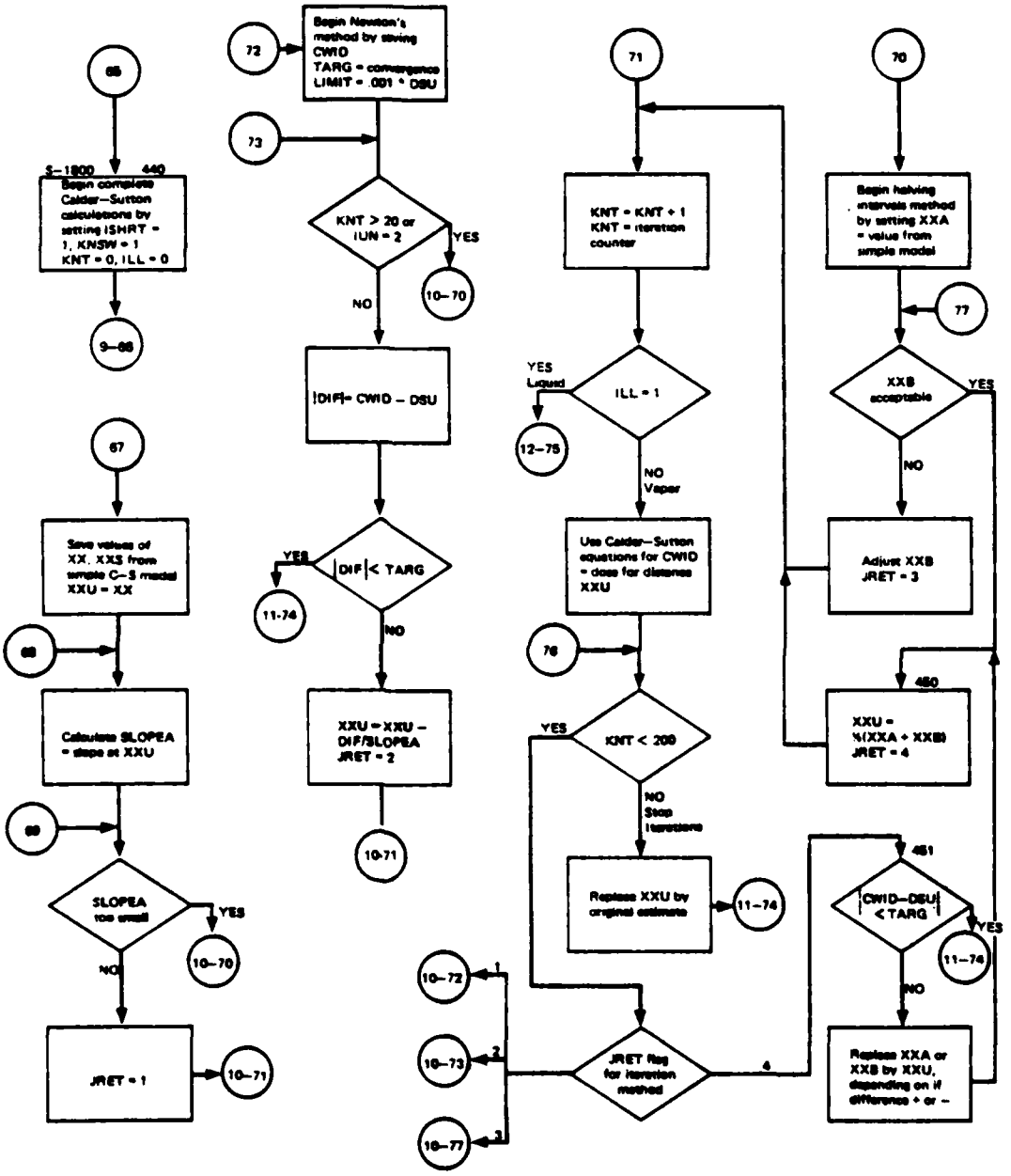


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 10 of 18)

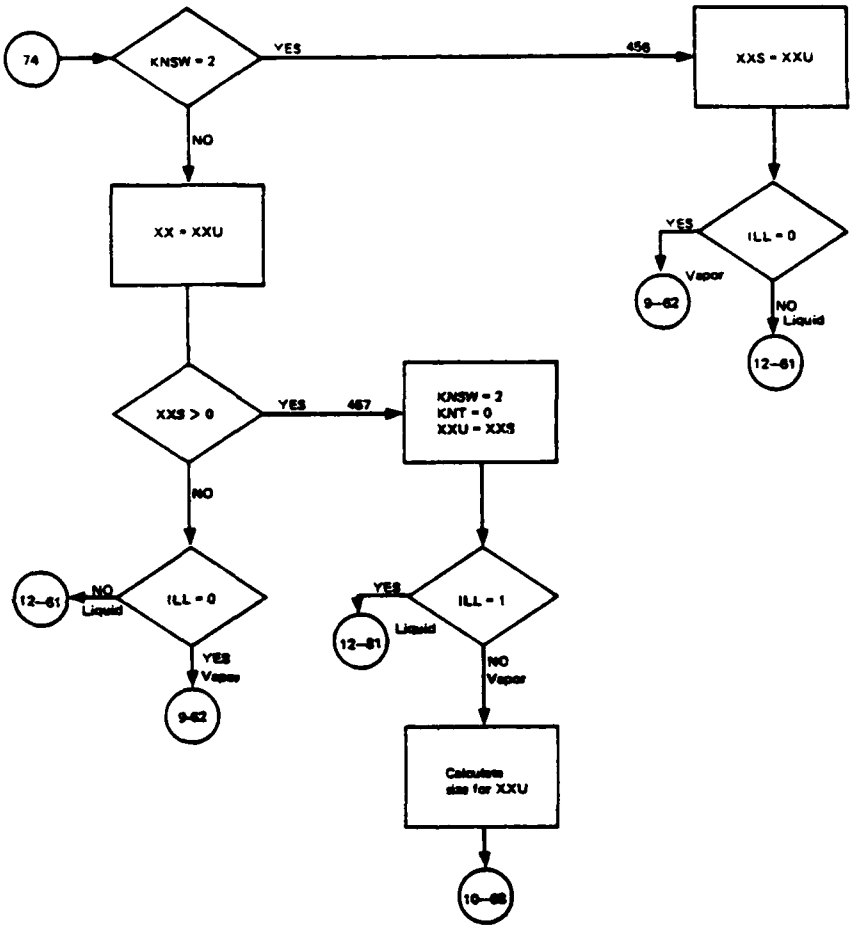


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 11 of 18)

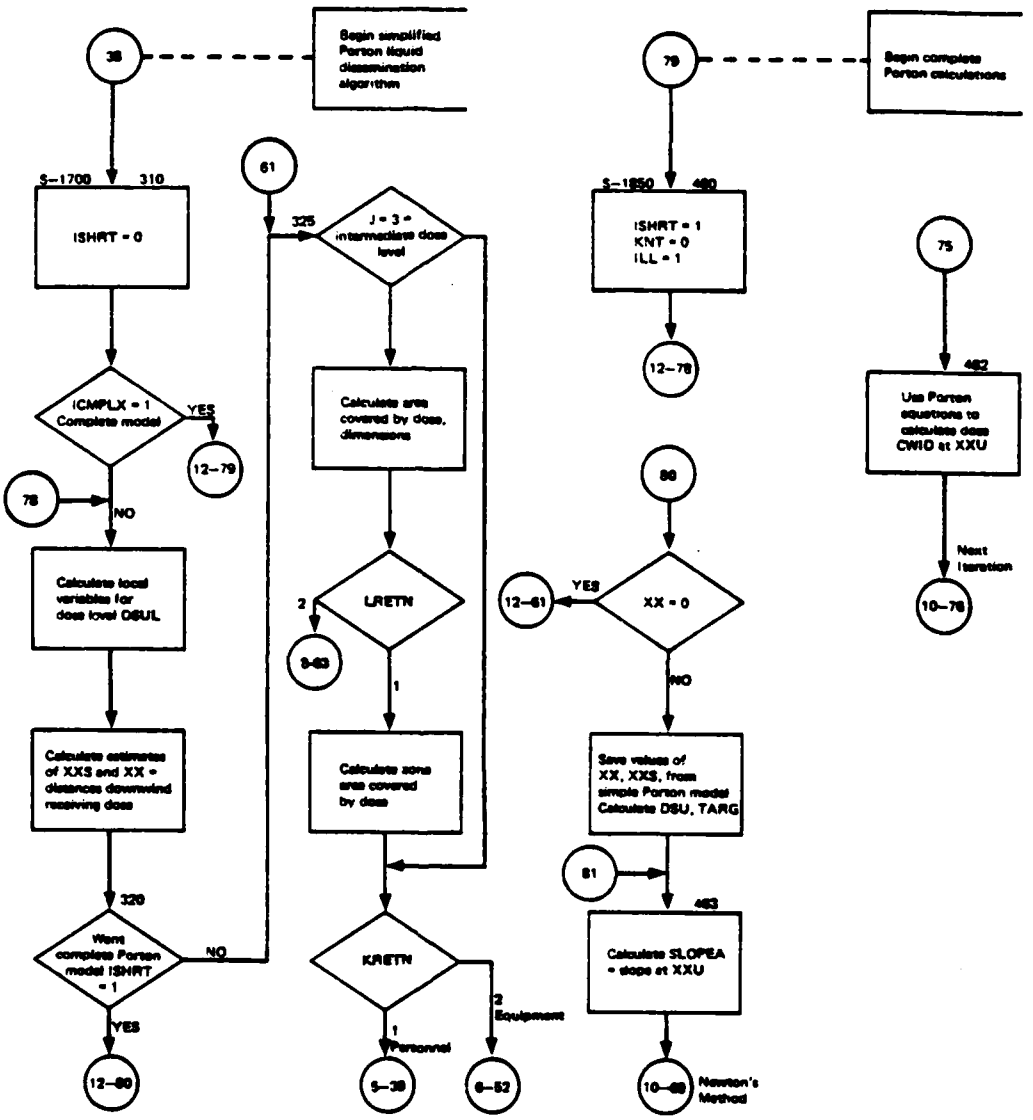


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 12 of 18)

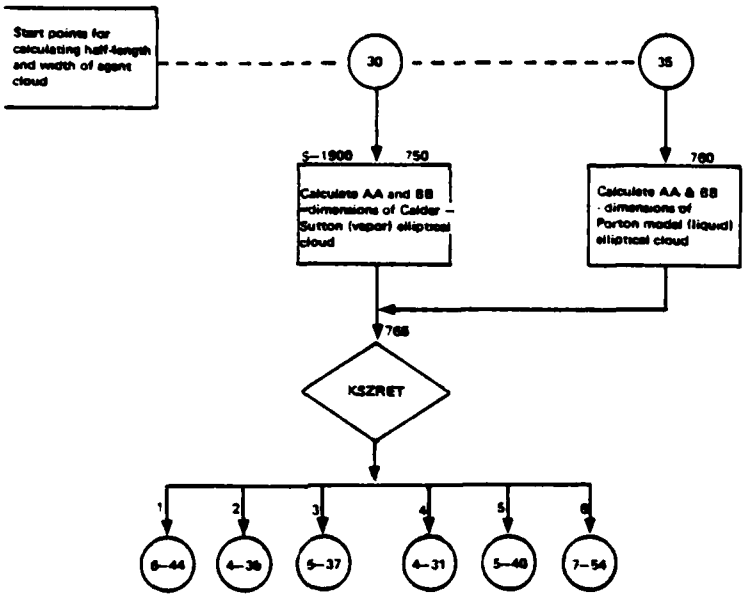


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 13 of 18)

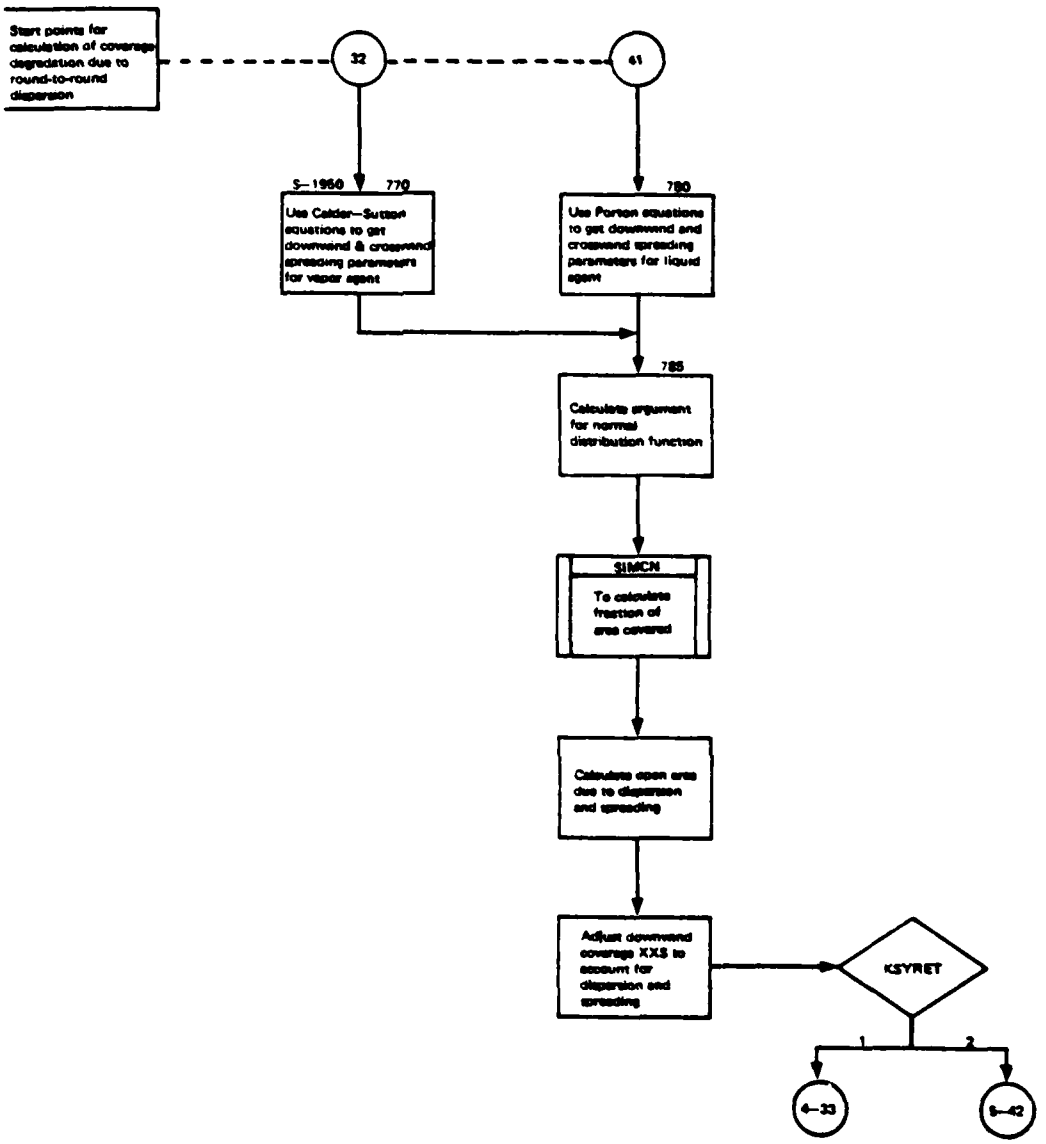


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 14 of 18)

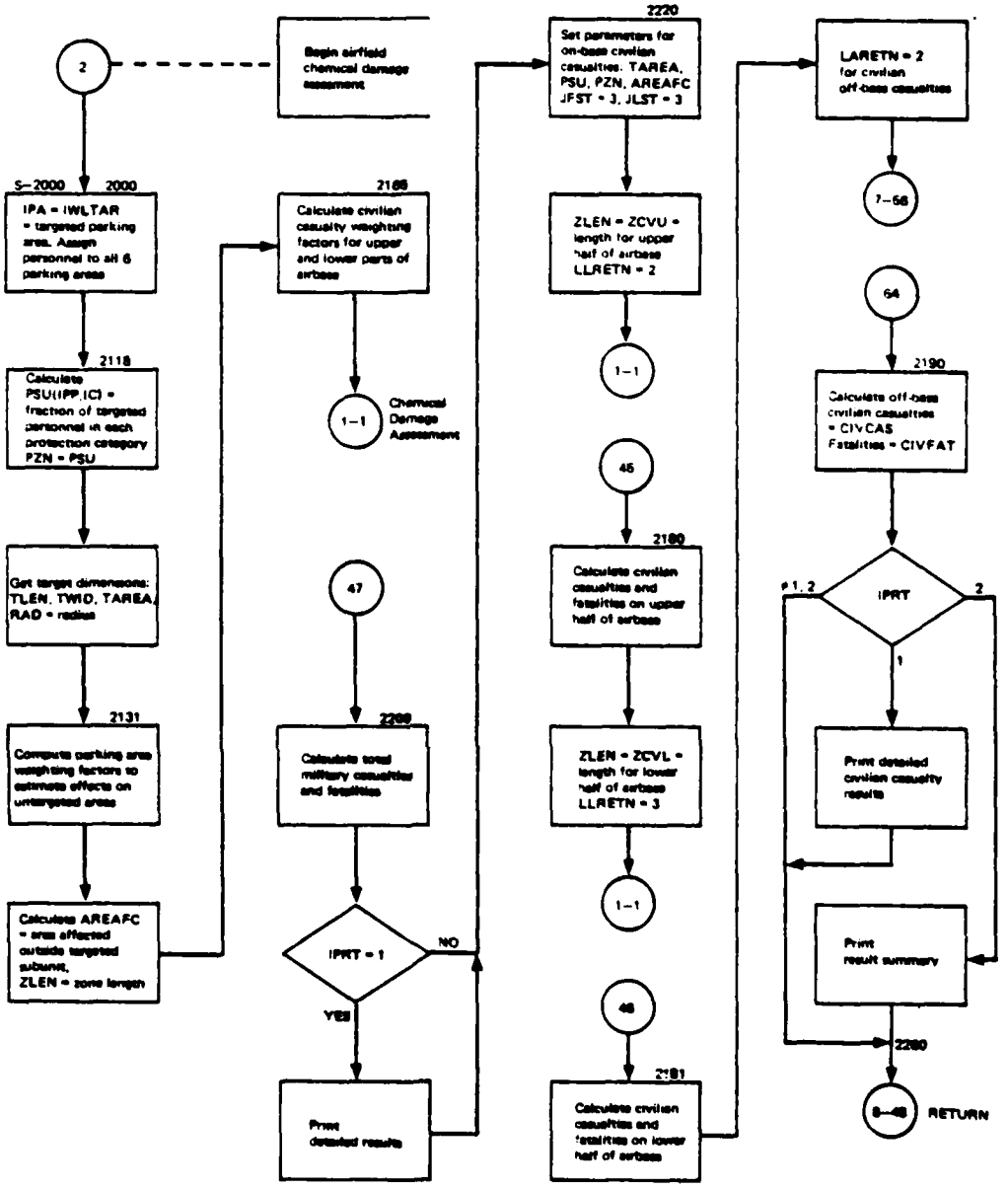


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 15 of 18)

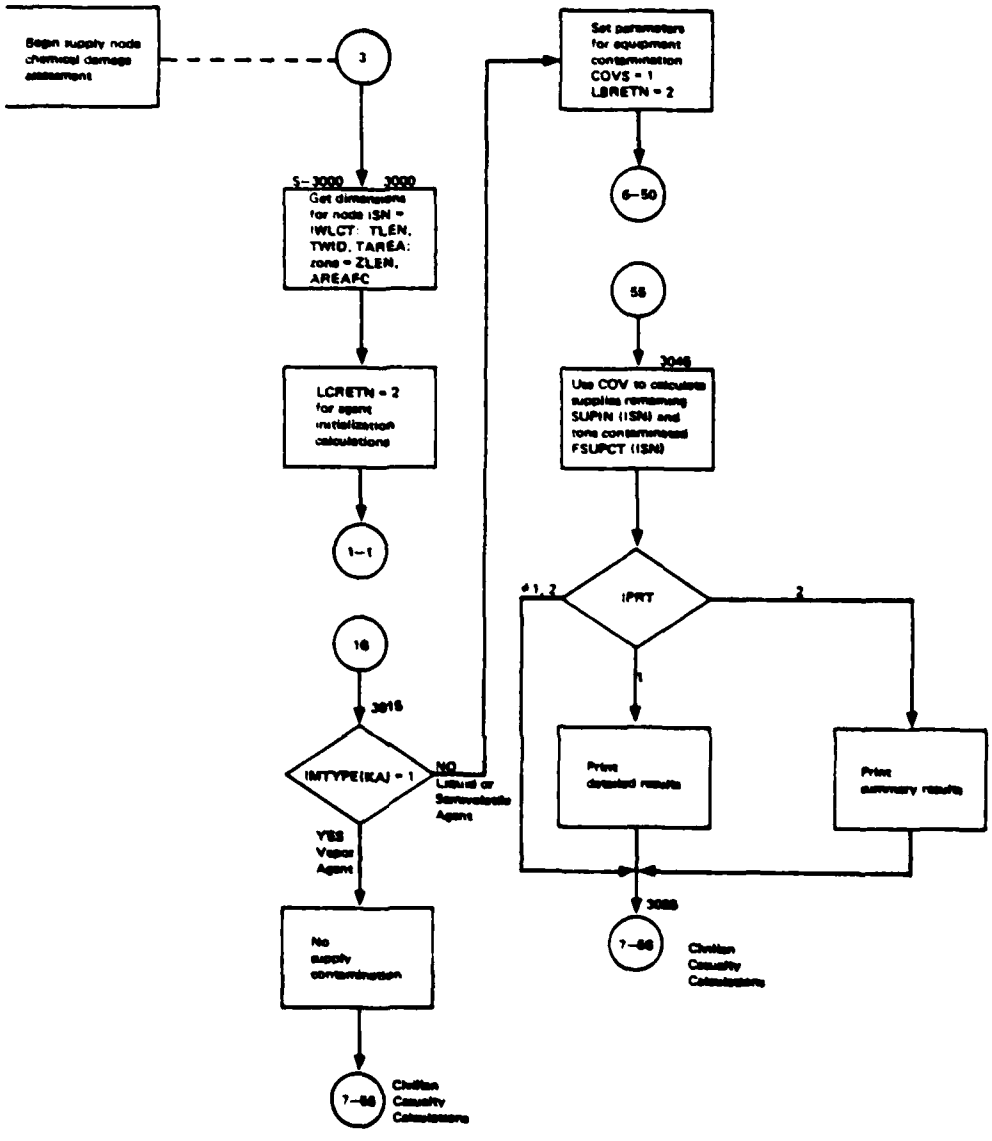


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 16 of 18)

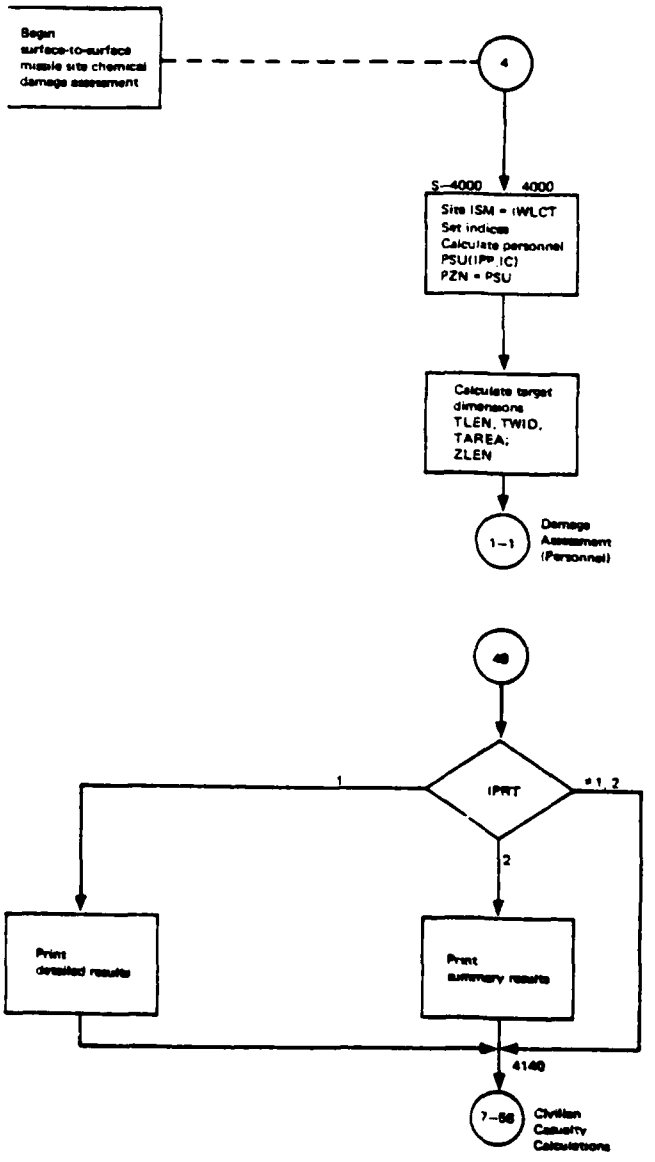


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 17 of 18)

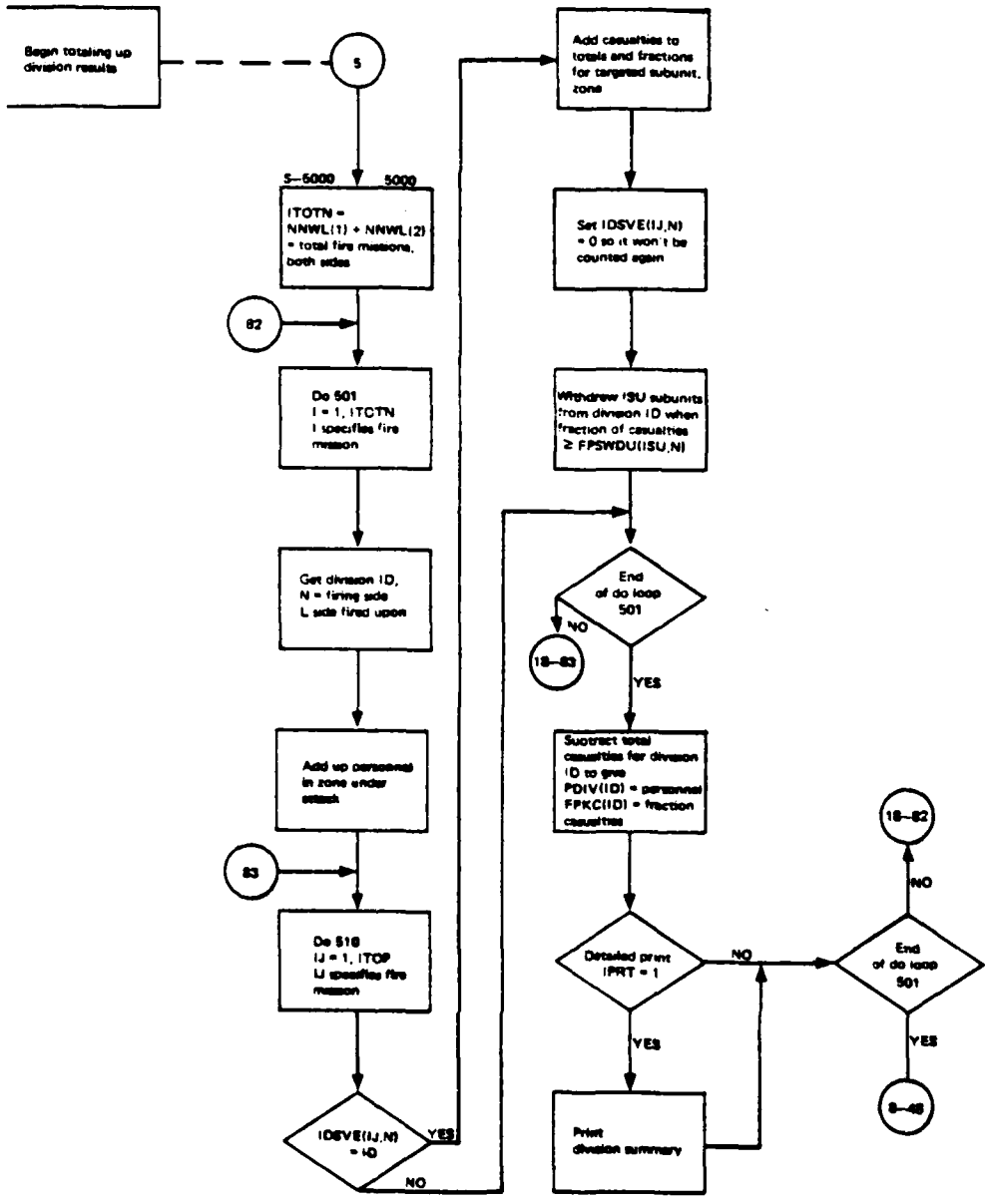


Figure 108. Flowchart of TACWAR Routine CHEMDAM (Part 18 of 18)

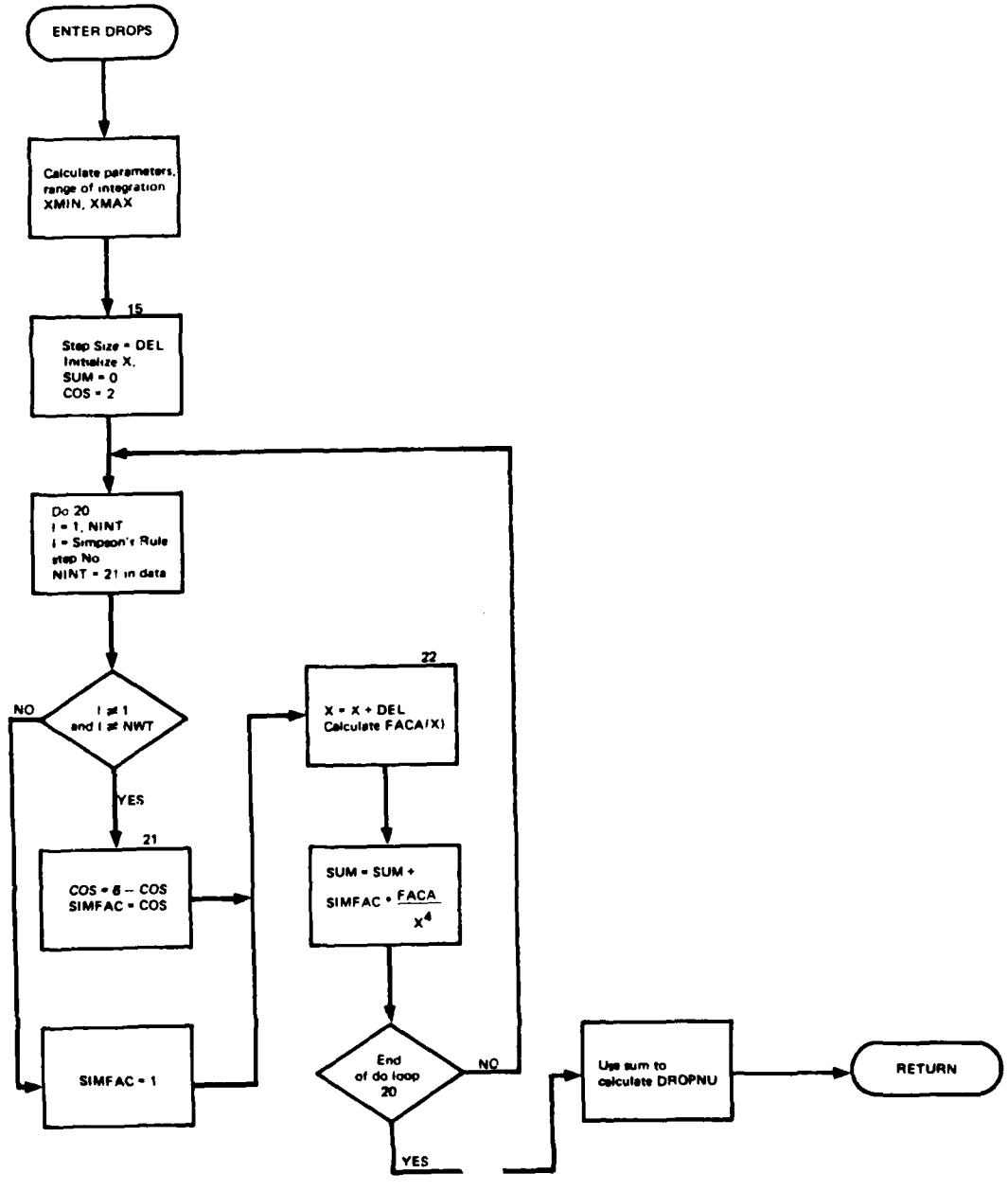


Figure 109. Flowchart of TACWAR Routine DROPS

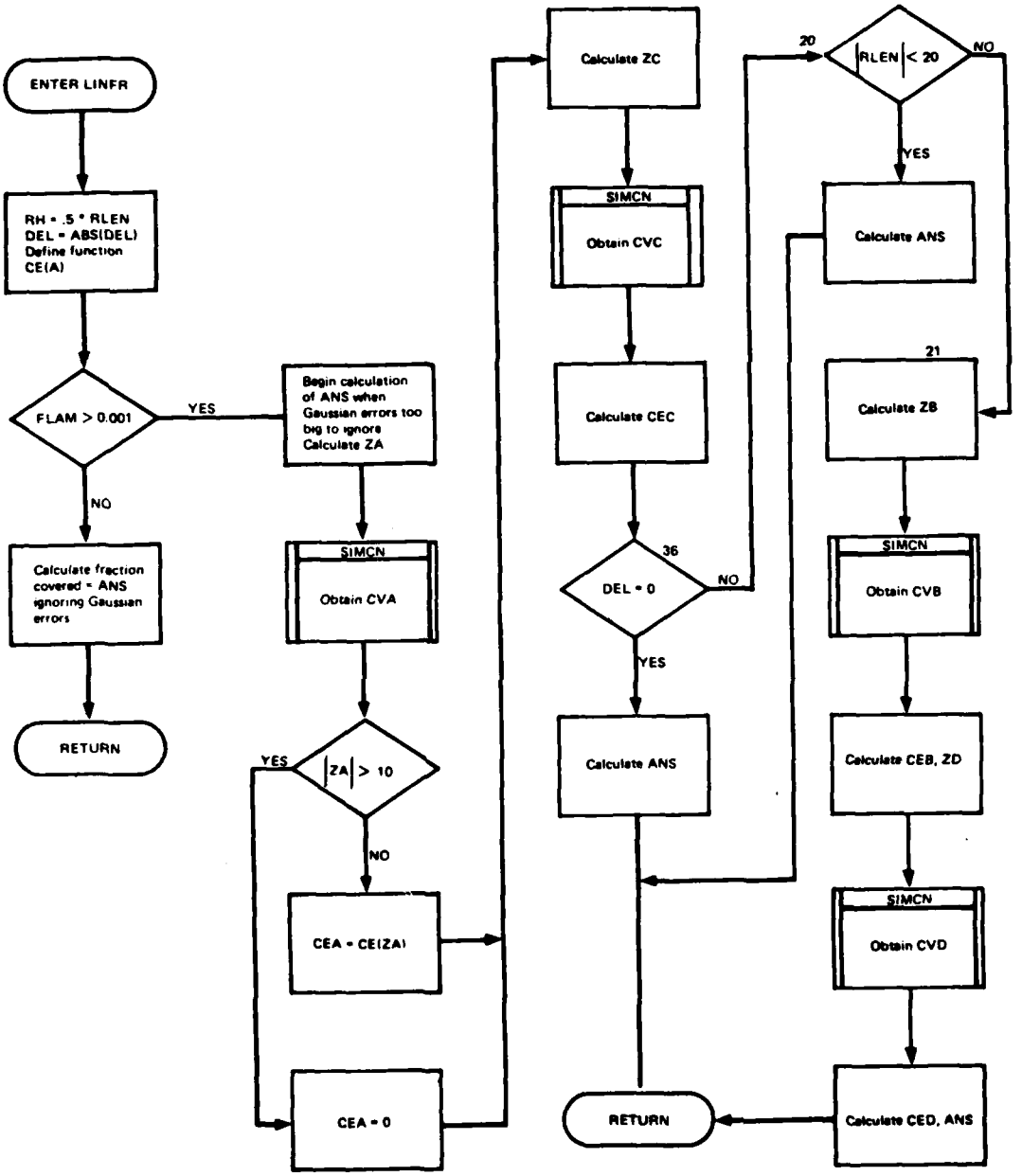


Figure 110. Flowchart of TACWAR Routine LINFR

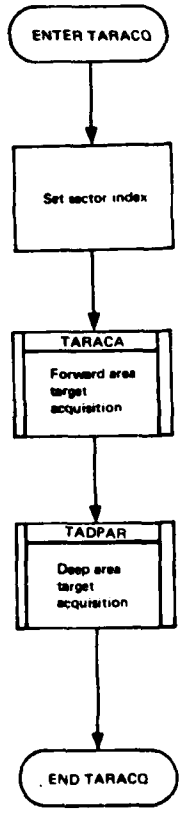


Figure 111. Flowchart of TACWAR Routine TARACQ

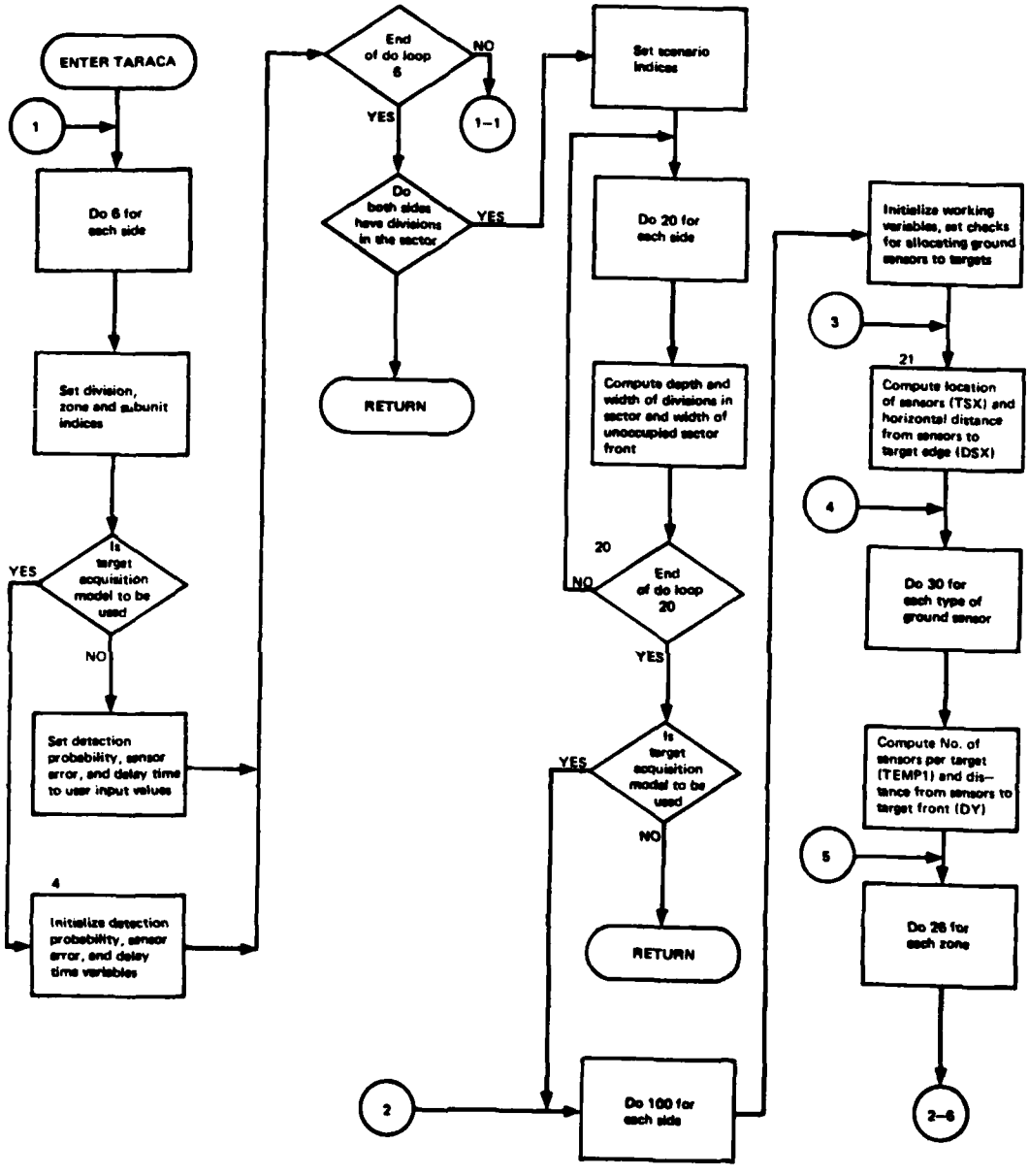


Figure 112. Flowchart of TACWAR Routine TARACA (Part 1 of 4)

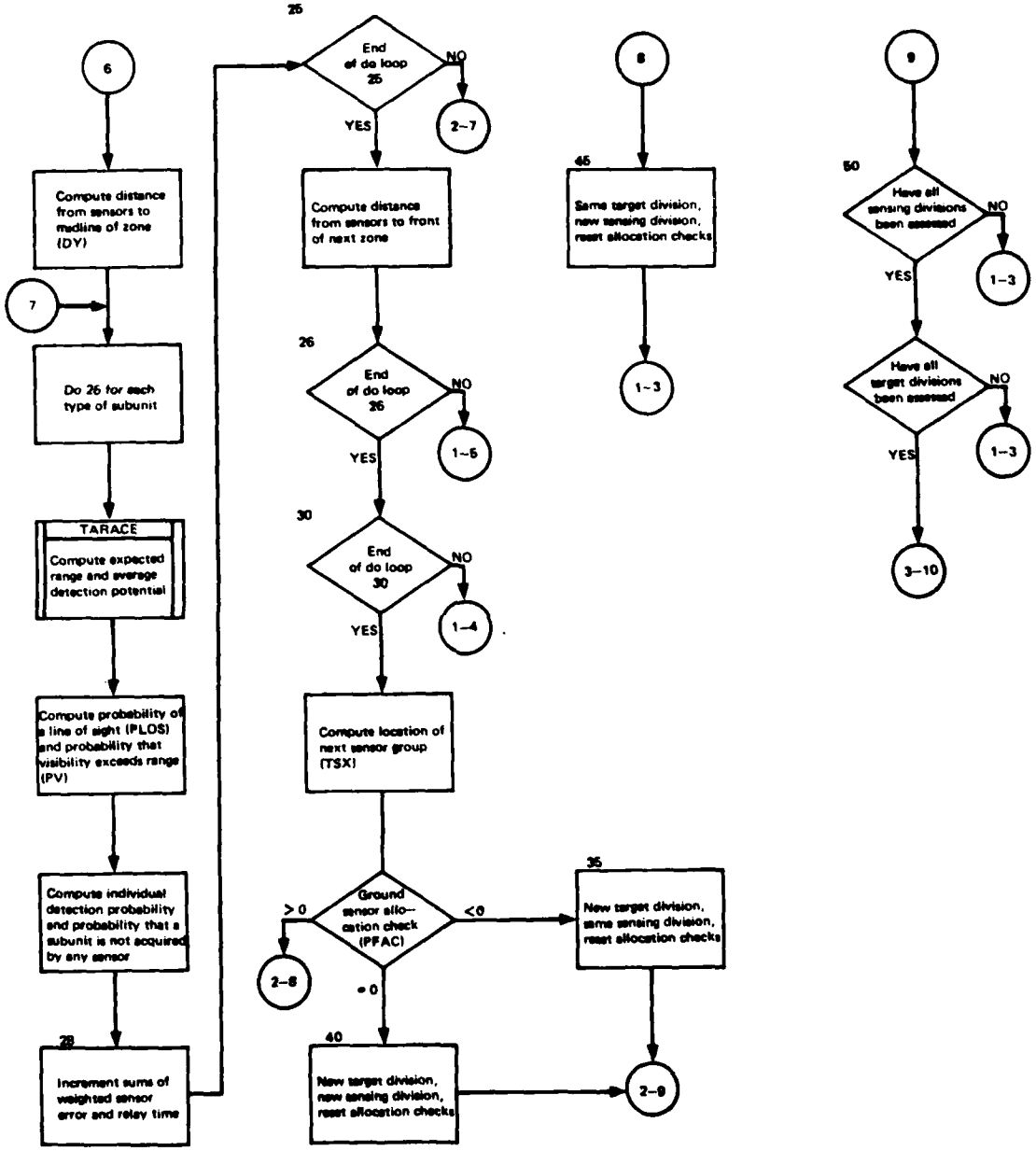


Figure 112. Flowchart of TACWAR Routine TARACA (Part 2 of 4)

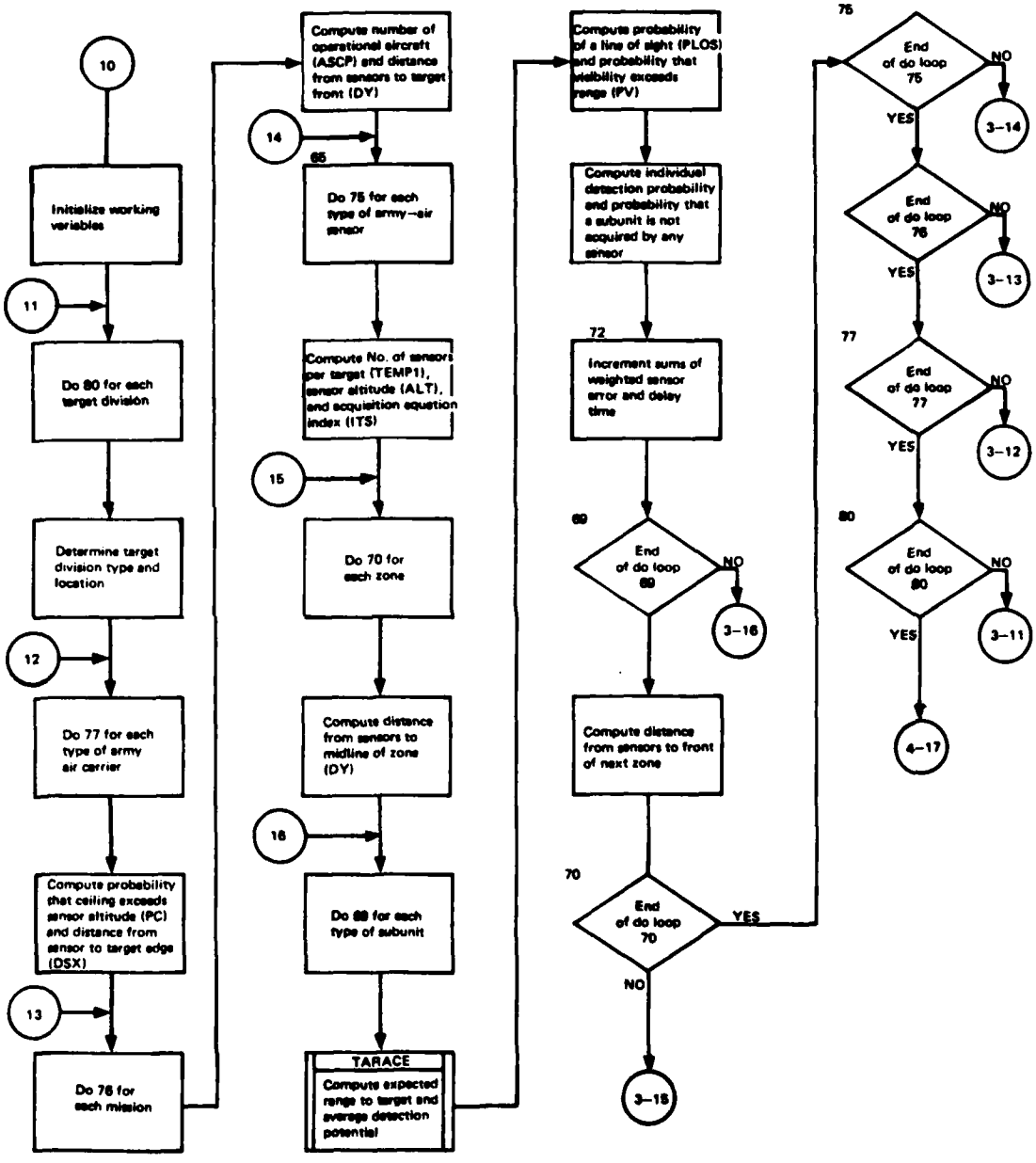


Figure 112. Flowchart of TACWAR Routine TARACA (Part 3 of 4)

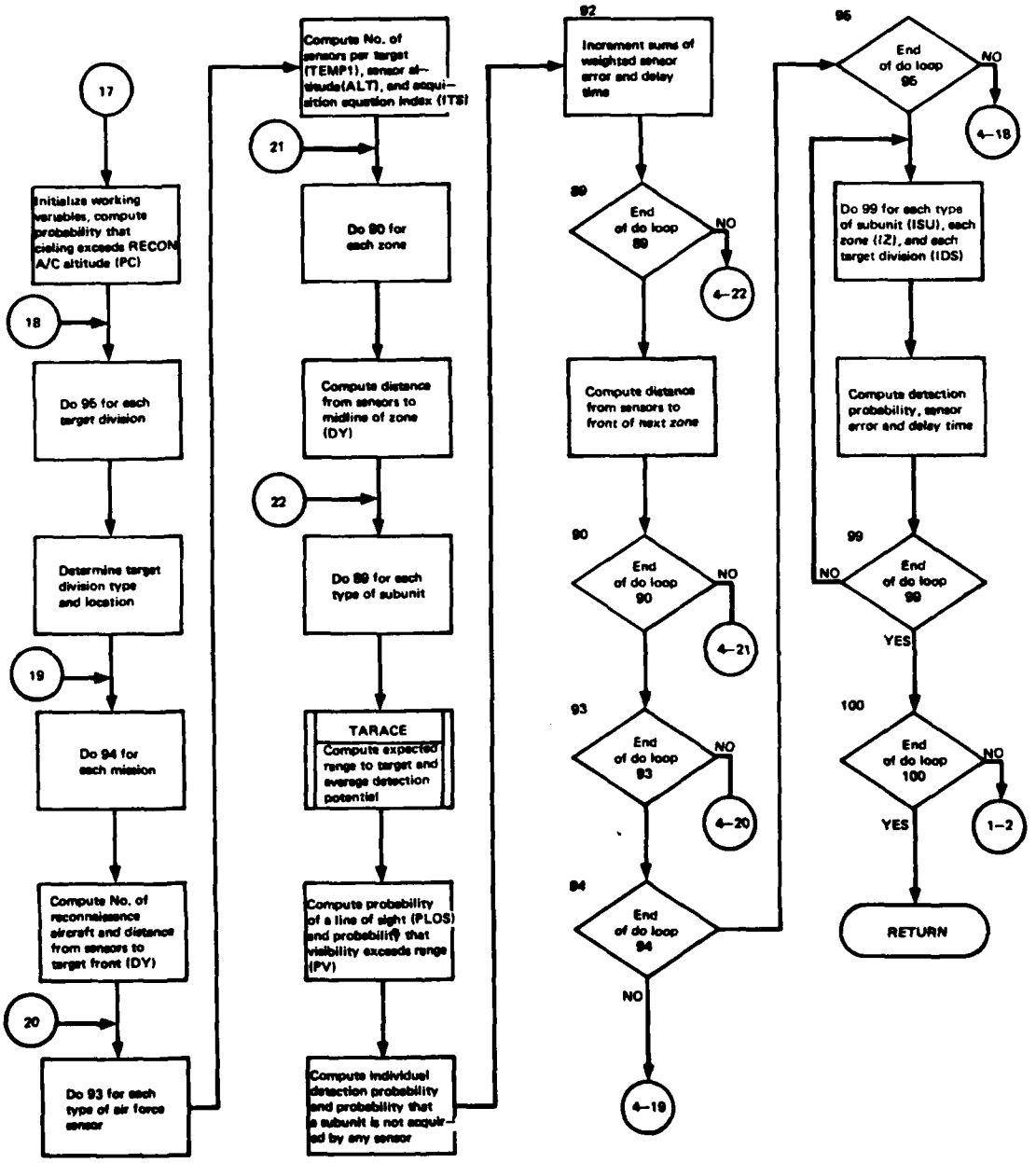


Figure 112. Flowchart of TACWAR Routine TARACA (Part 4 of 4)

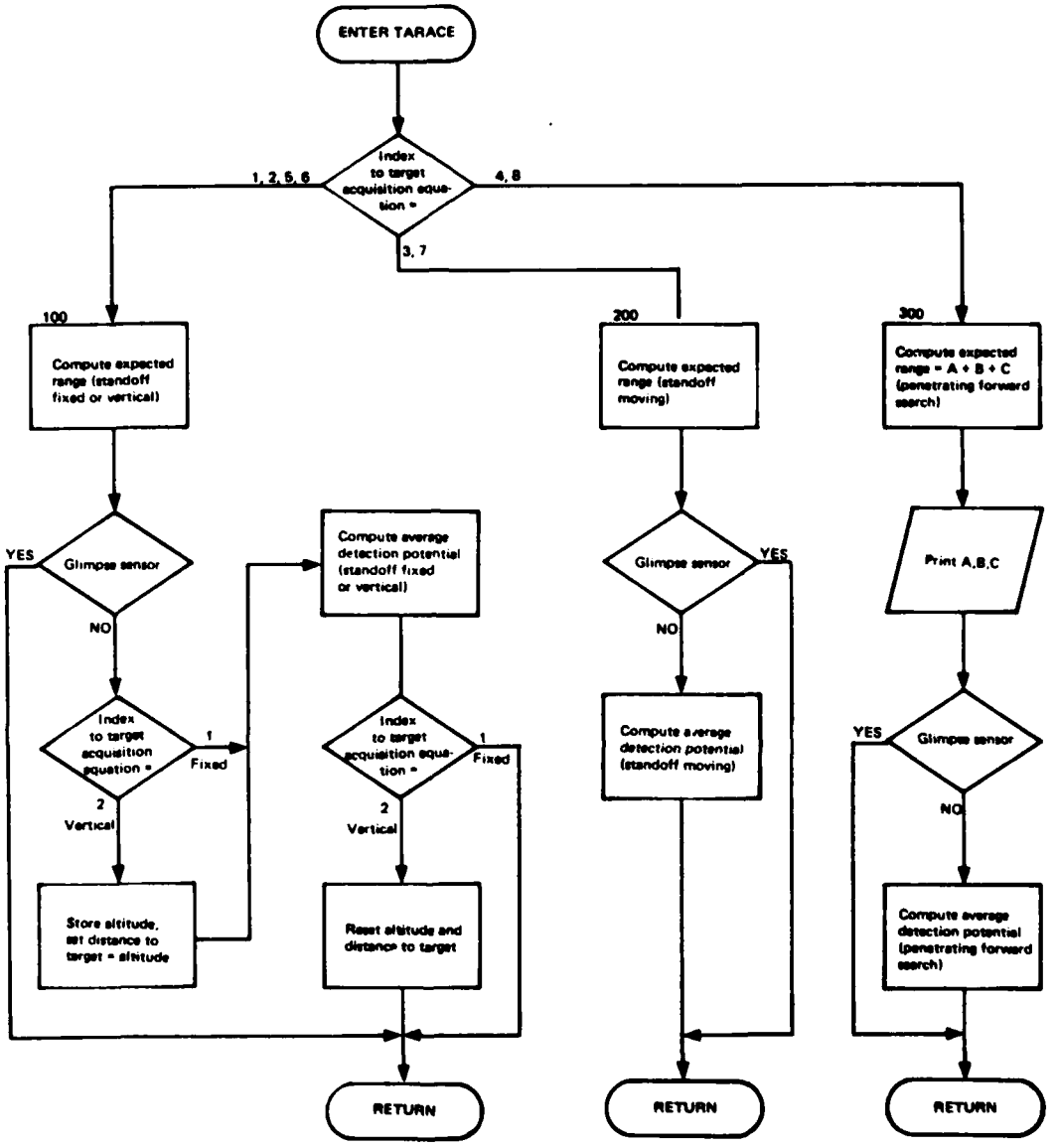


Figure 113. Flowchart of TACWAR Routine TARACE

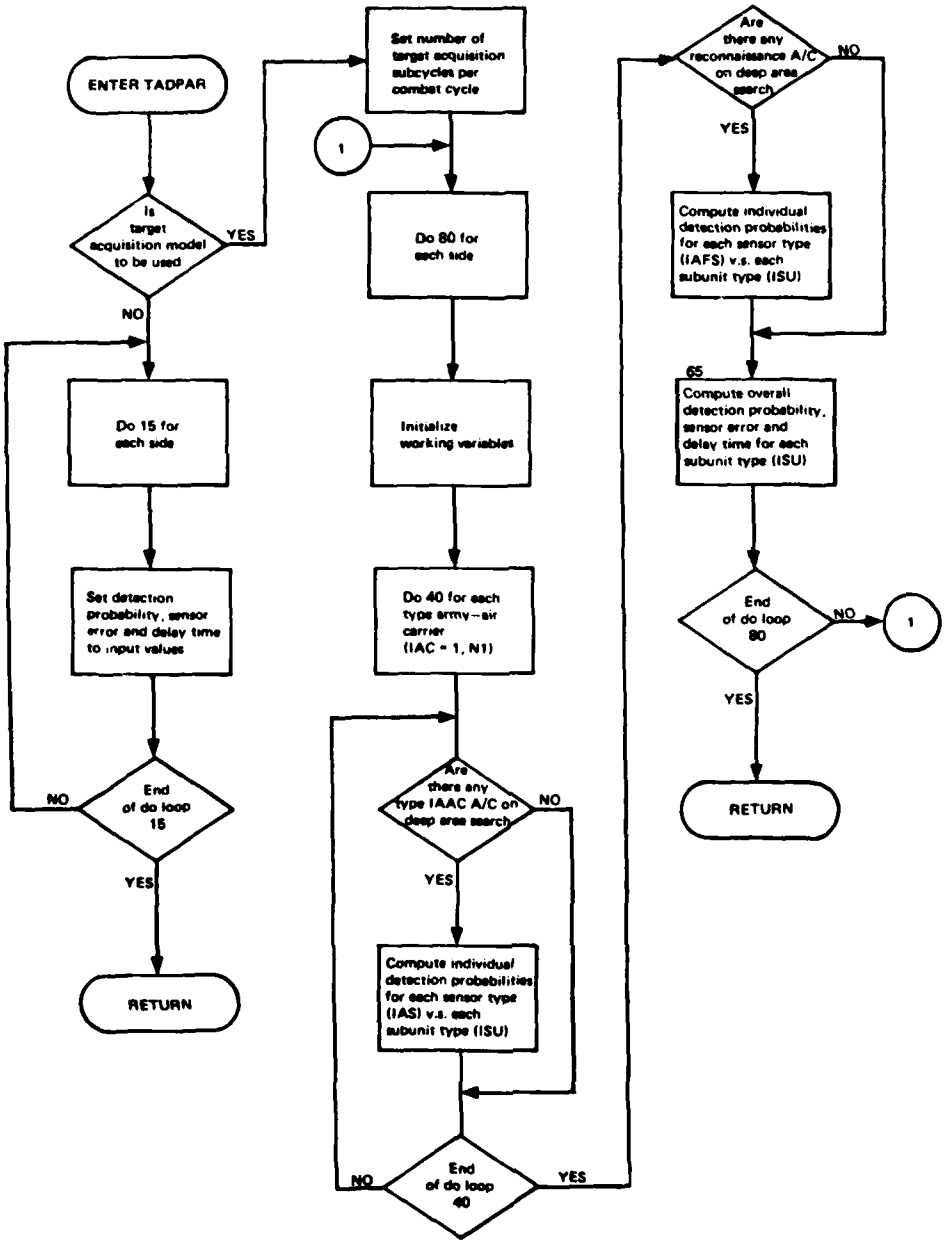


Figure 114. Flowchart of TACWAR Routine TADPAR

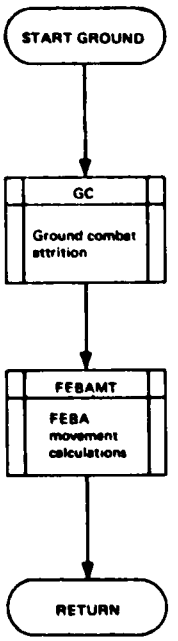


Figure 115. Flowchart of TACWAR Routine GROUND

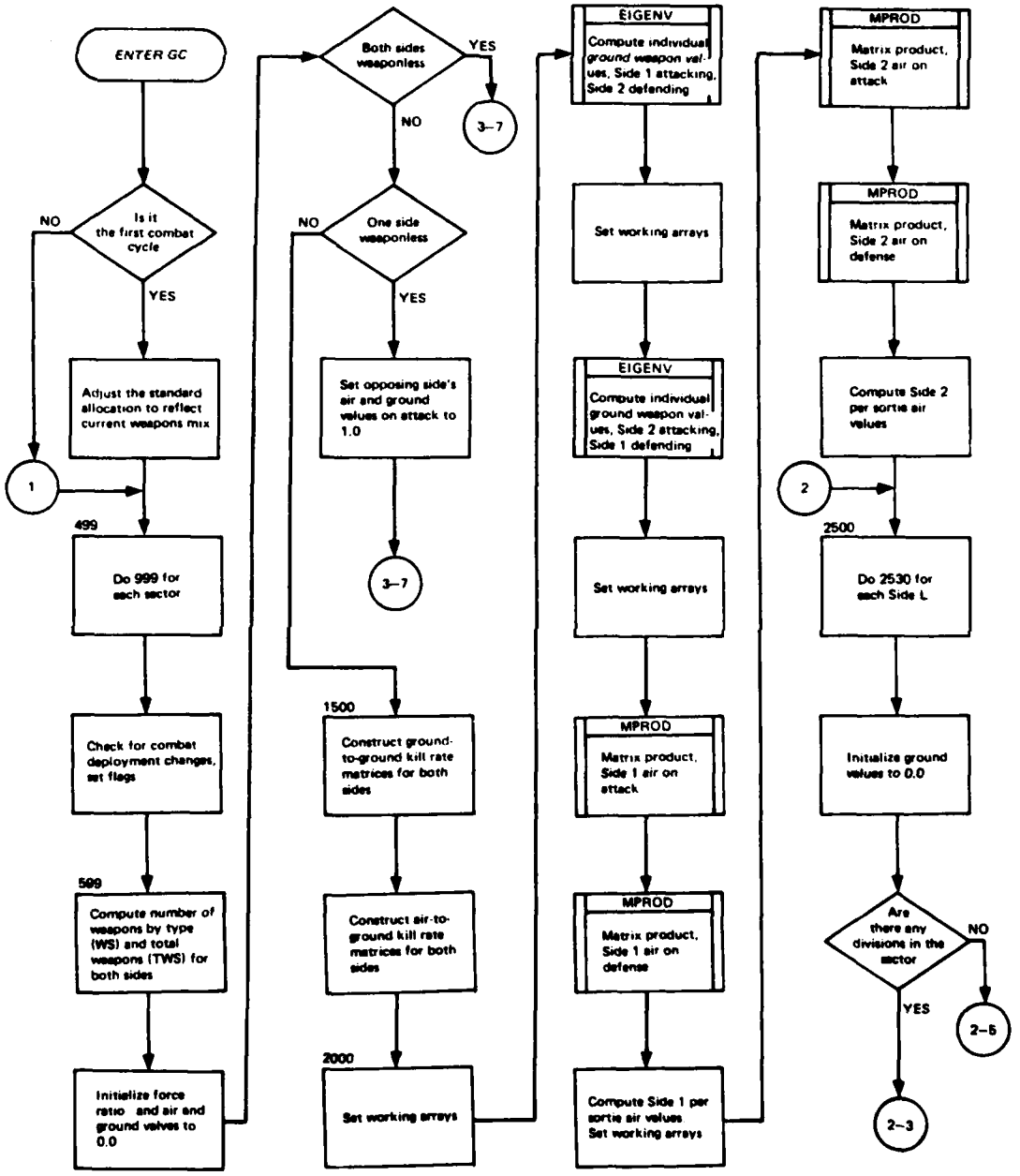


Figure 116. Flowchart of TACWAR Routine GC (Part 1 of 3)

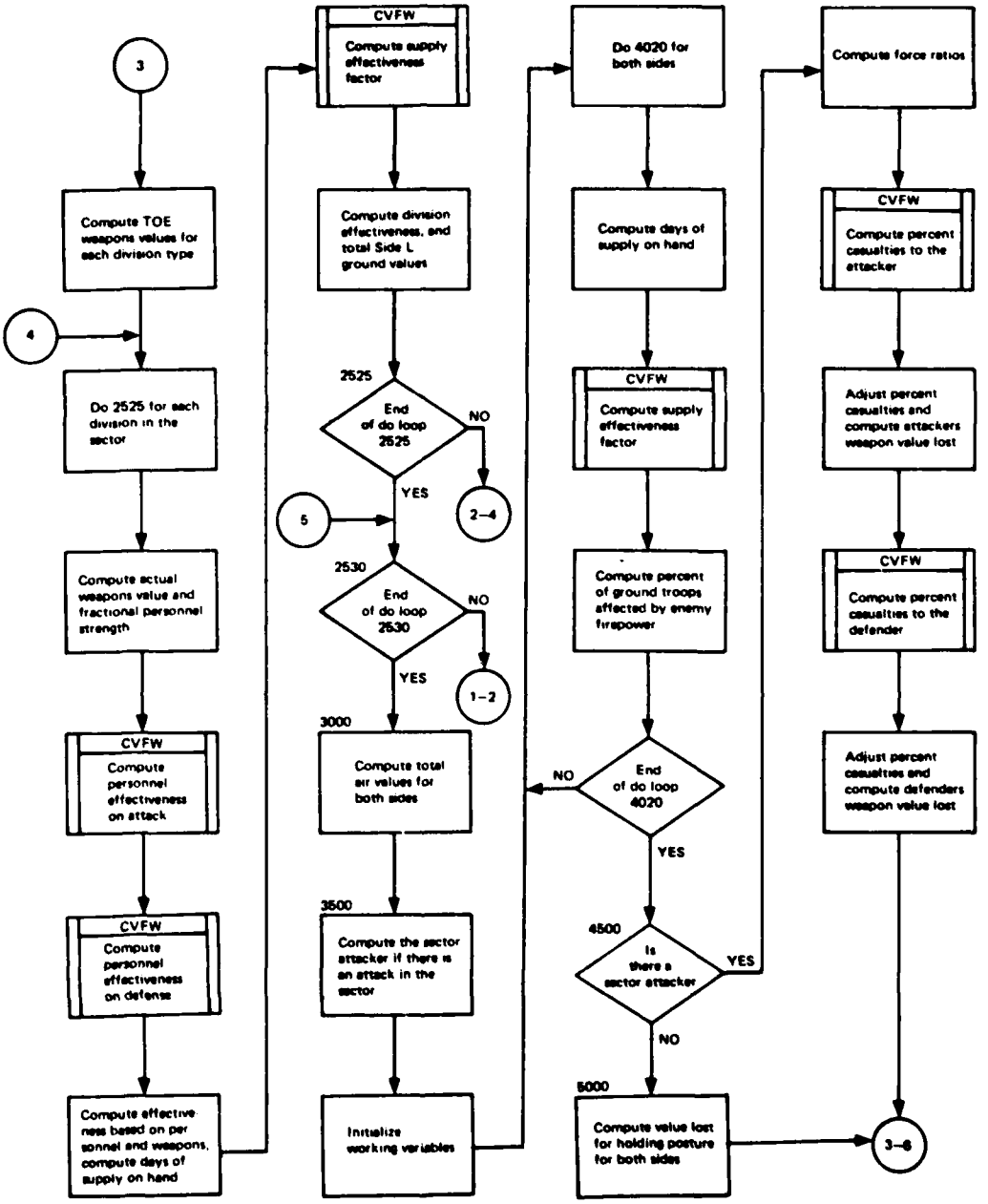


Figure 116. Flowchart of TACWAR Routine GC (Part 2 of 3)

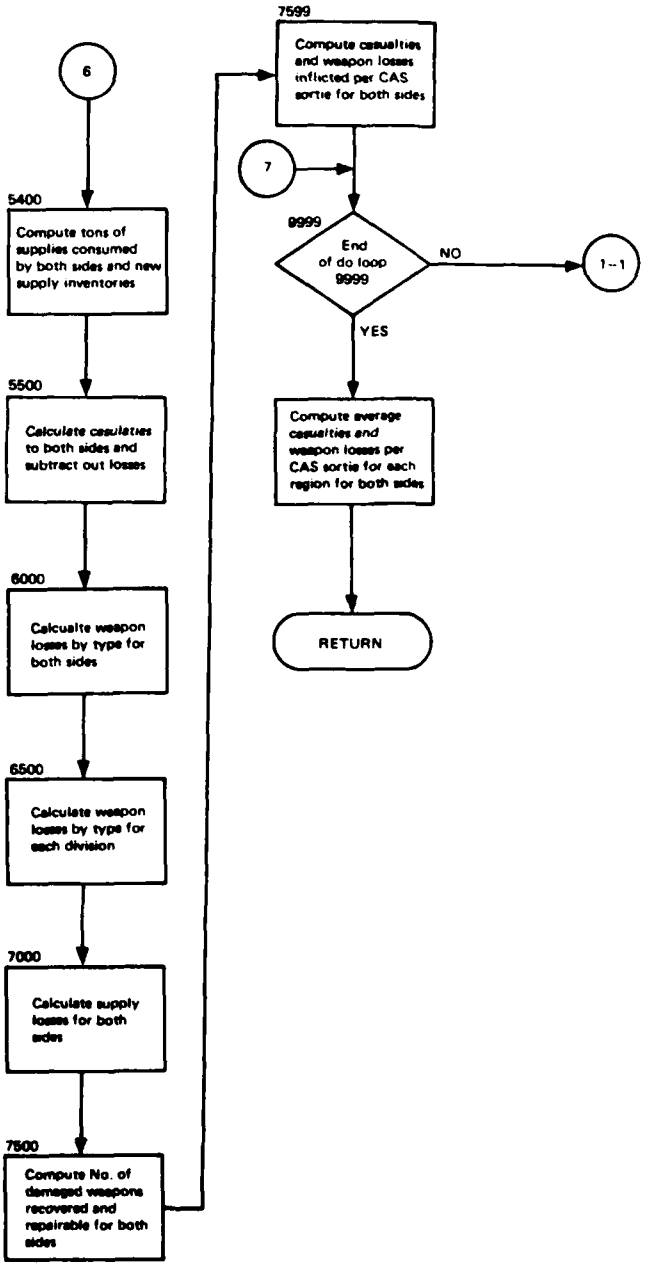


Figure 116. Flowchart of TACWAR Routine GC (Part 3 of 3)

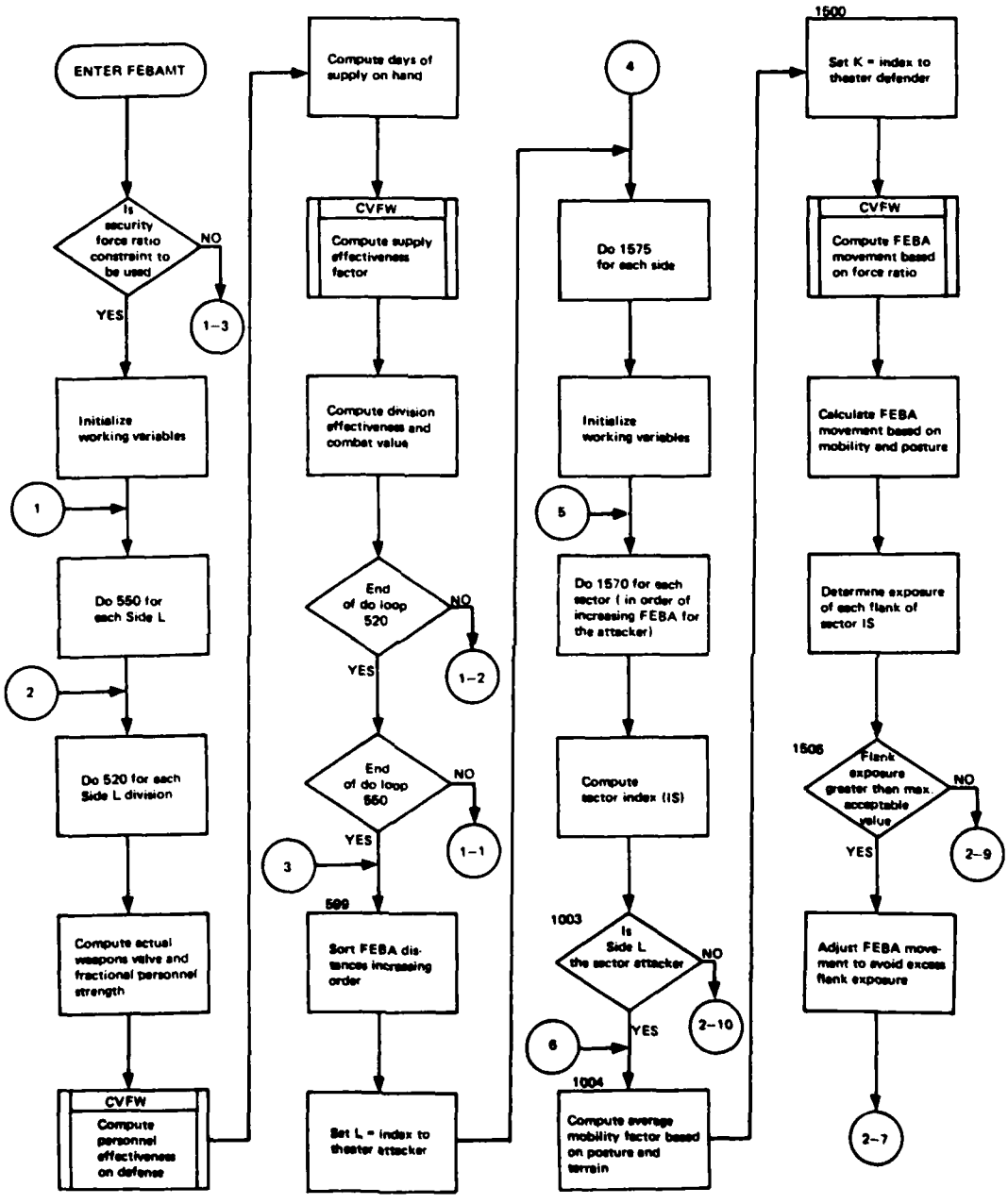
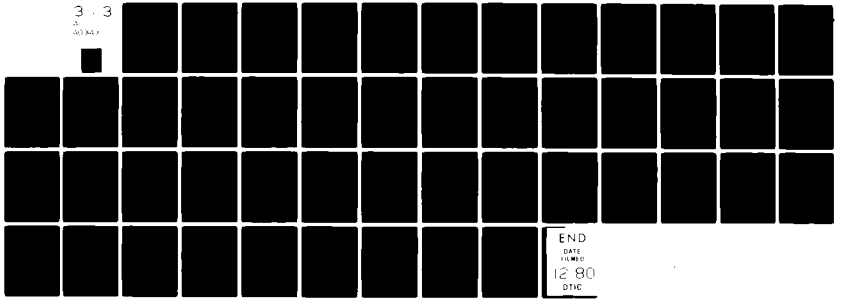
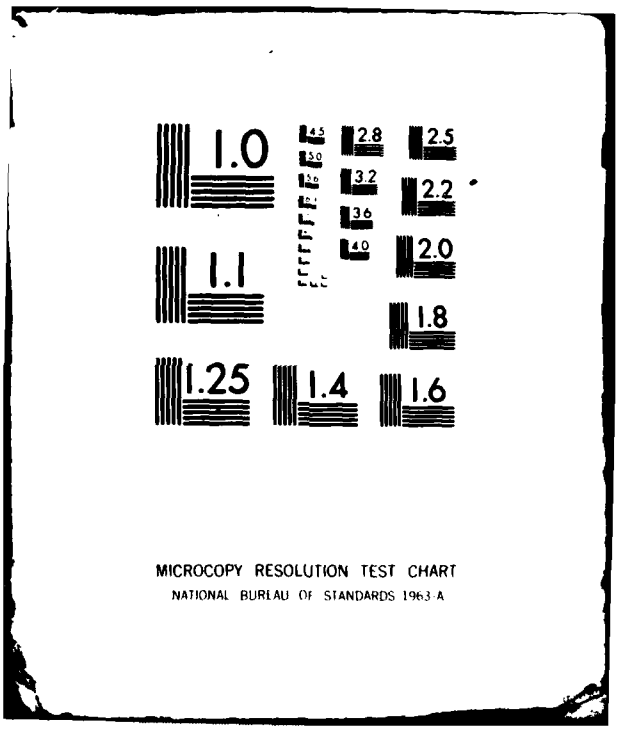


Figure 117. Flowchart of TACWAR Routine FEBAMT (Part 1 of 3)

AD-A091 492 COMMAND AND CONTROL TECHNICAL CENTER WASHINGTON DC F/G 9/2
INSTITUTE FOR DEFENSE ANALYSES TACTICAL WARFARE (TACWAR) MODEL.--ETC(U)
SEP 77 M C FLYTHE, P FINNEGAN, J REIERSON
UNCLASSIFIED CCTC-CSM-MM-237-77-PT-2 NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

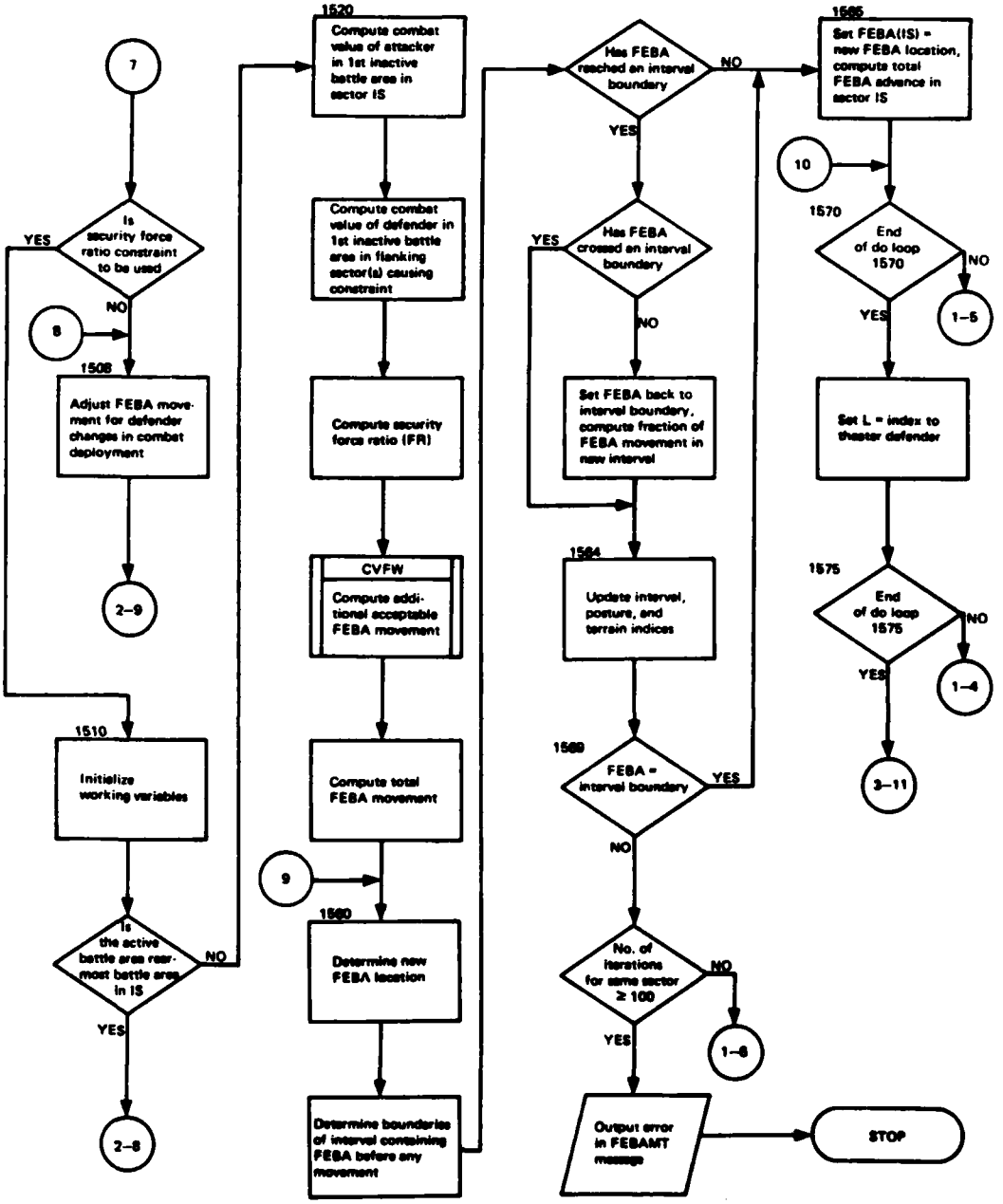


Figure 117. Flowchart of TACWAR Routine FEBAMT (Part 2 of 3)

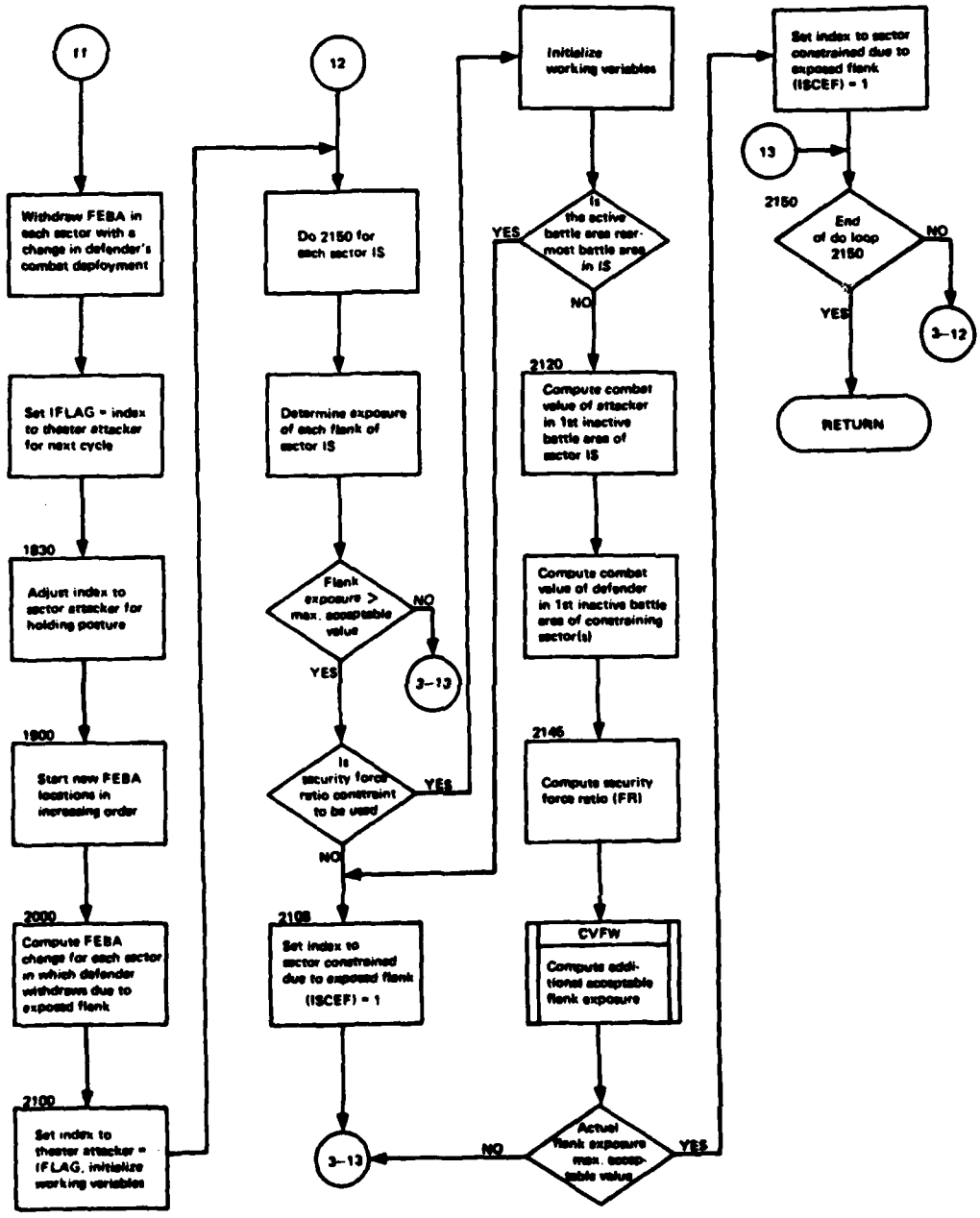


Figure 117. Flowchart of TACWAR Routine FEBAMT (Part 3 of 3)

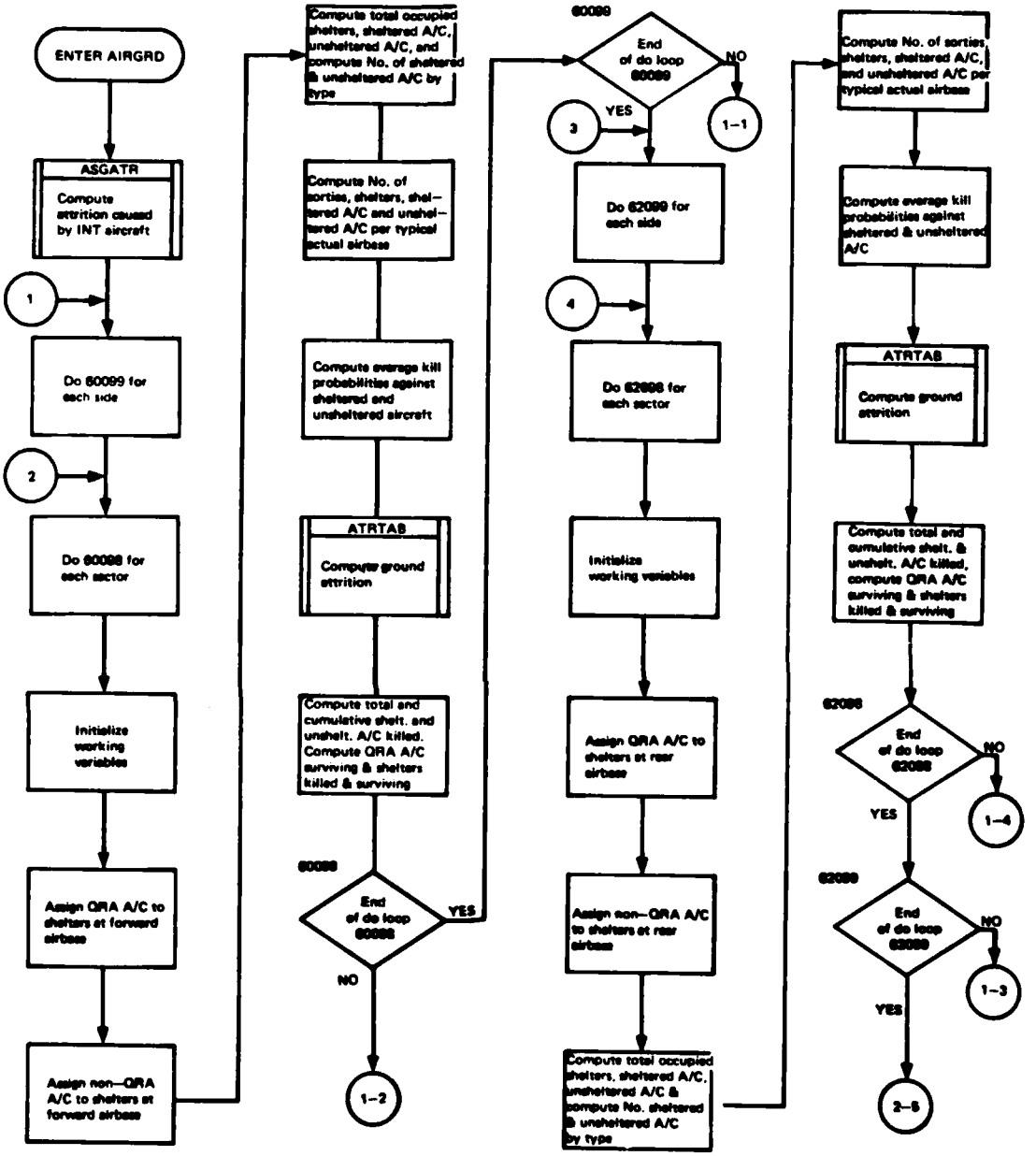


Figure 118. Flowchart of TACWAR Routine AIRGRD (Part 1 of 2)

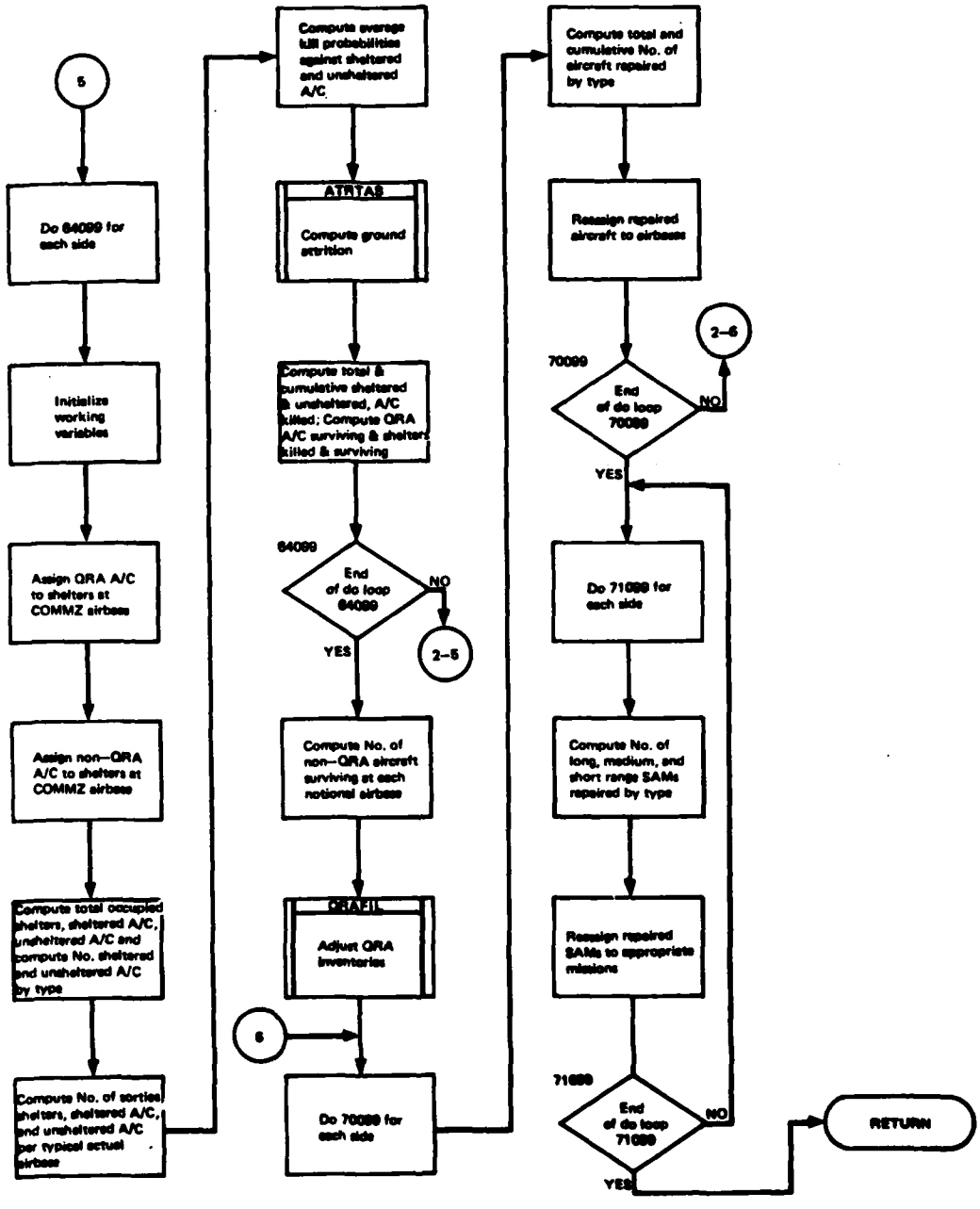


Figure 118. Flowchart of TACWAR Routine AIRGRD (Part 2 of 2)

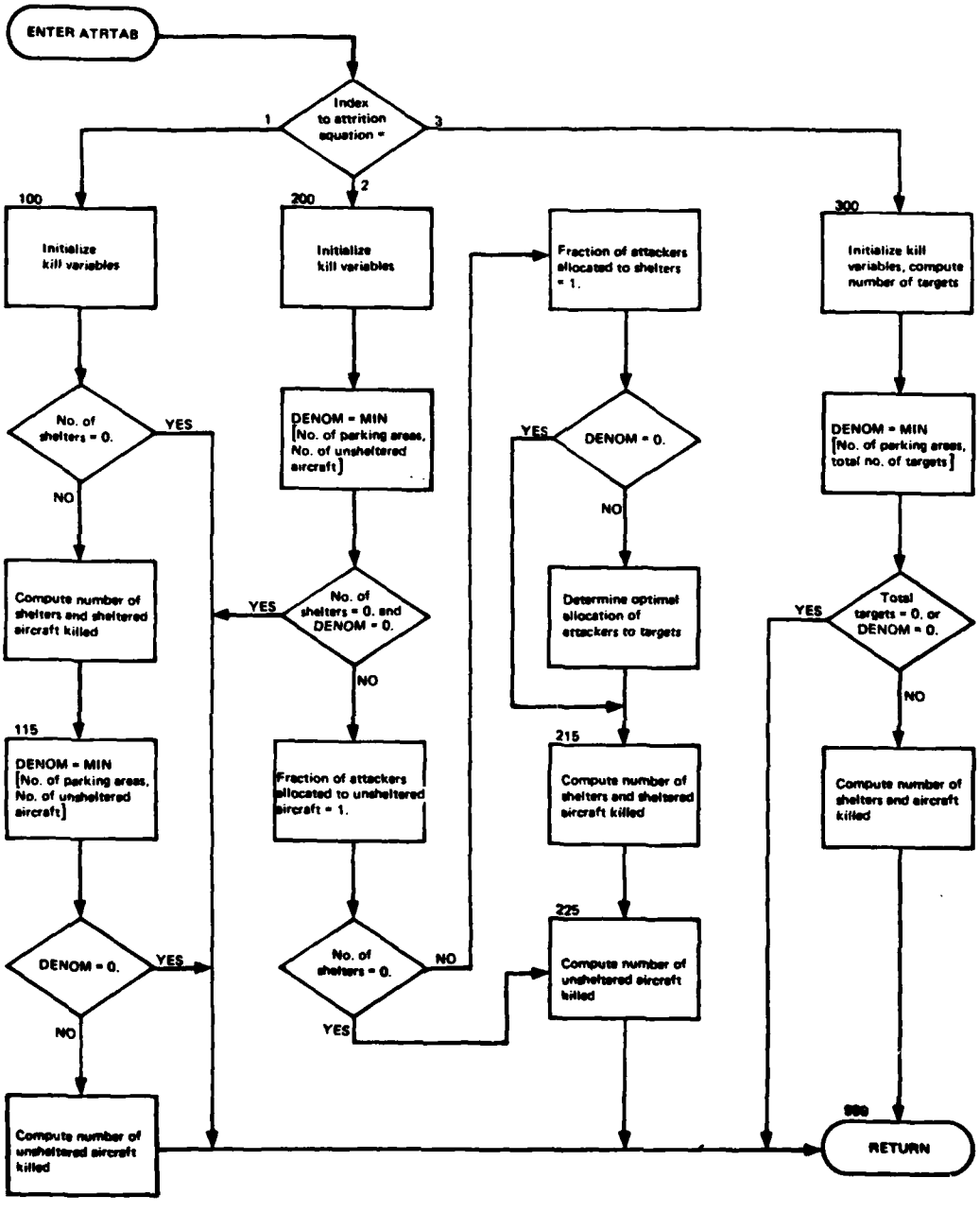


Figure 119. Flowchart of TACWAR Routine ATRTAB

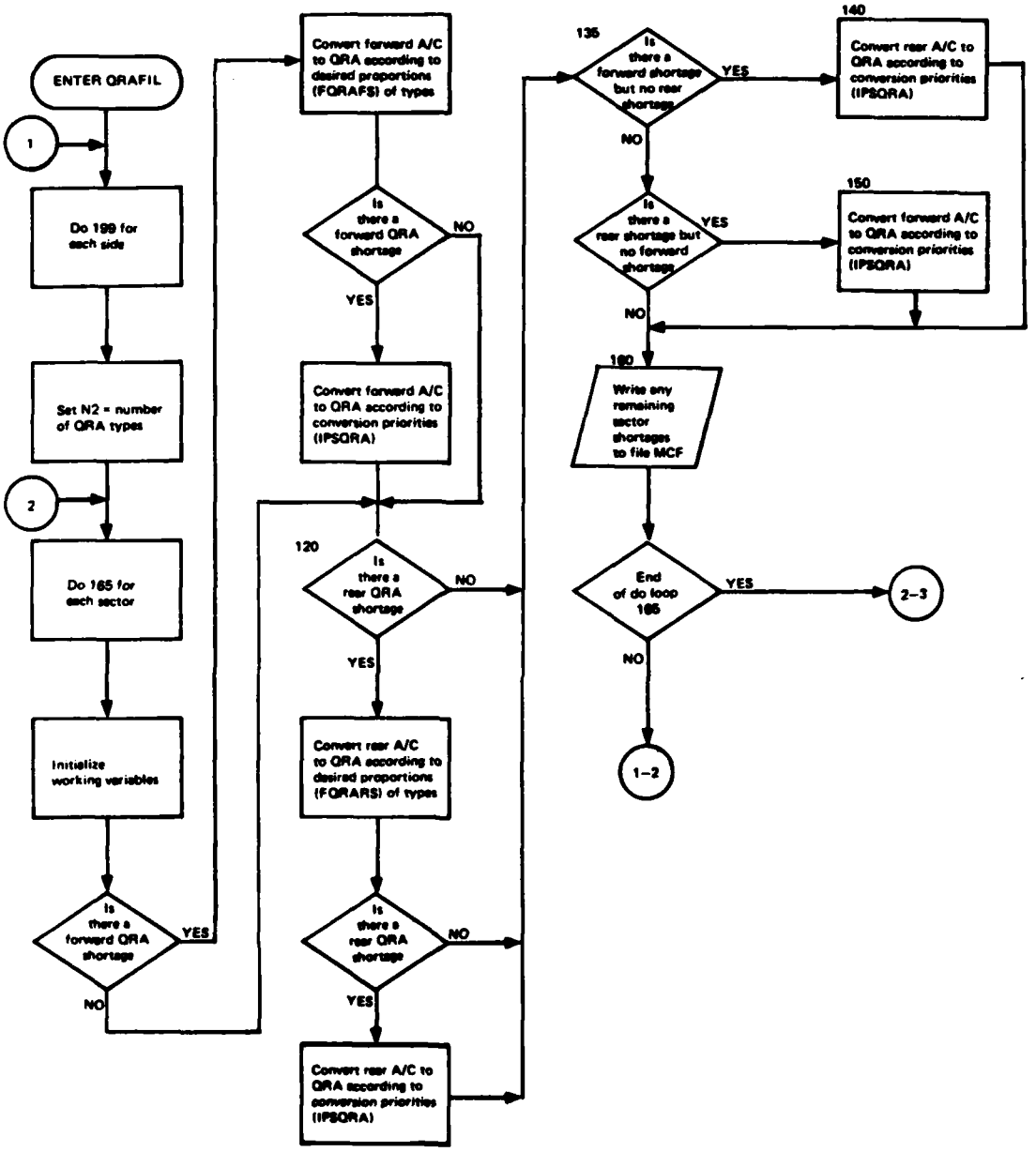


Figure 120. Flowchart of TACWAR Routine QRAFIL (Part 1 of 2)

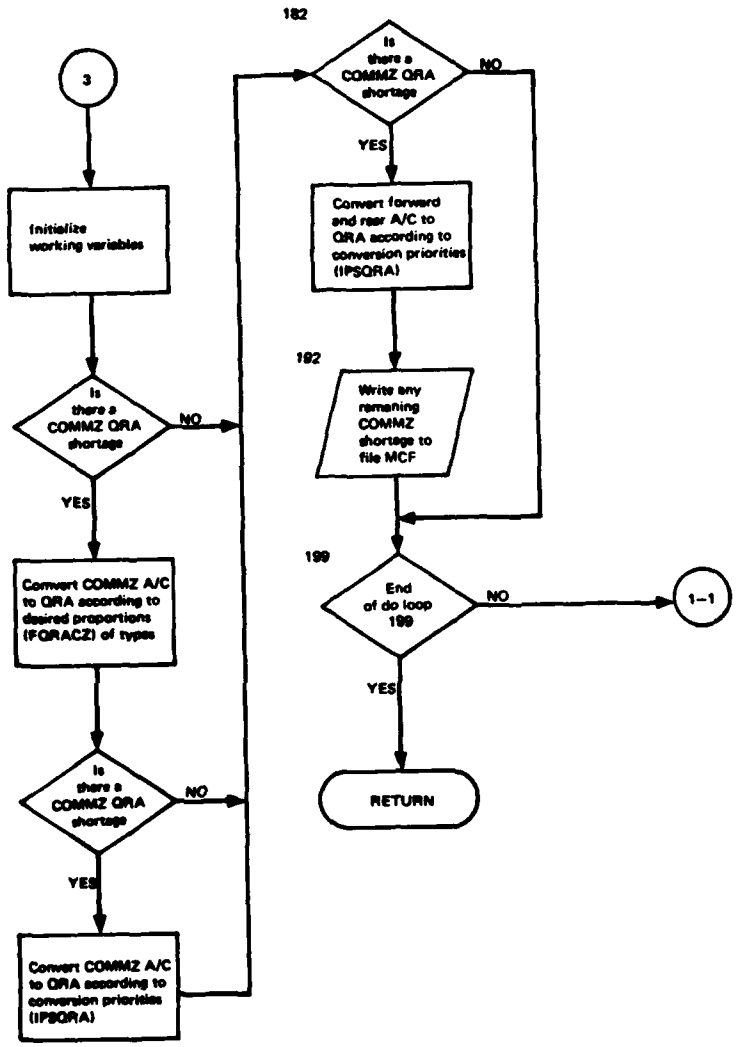


Figure 120. Flowchart of TACWAR Routine QRAFIL (Part 2 of 2)

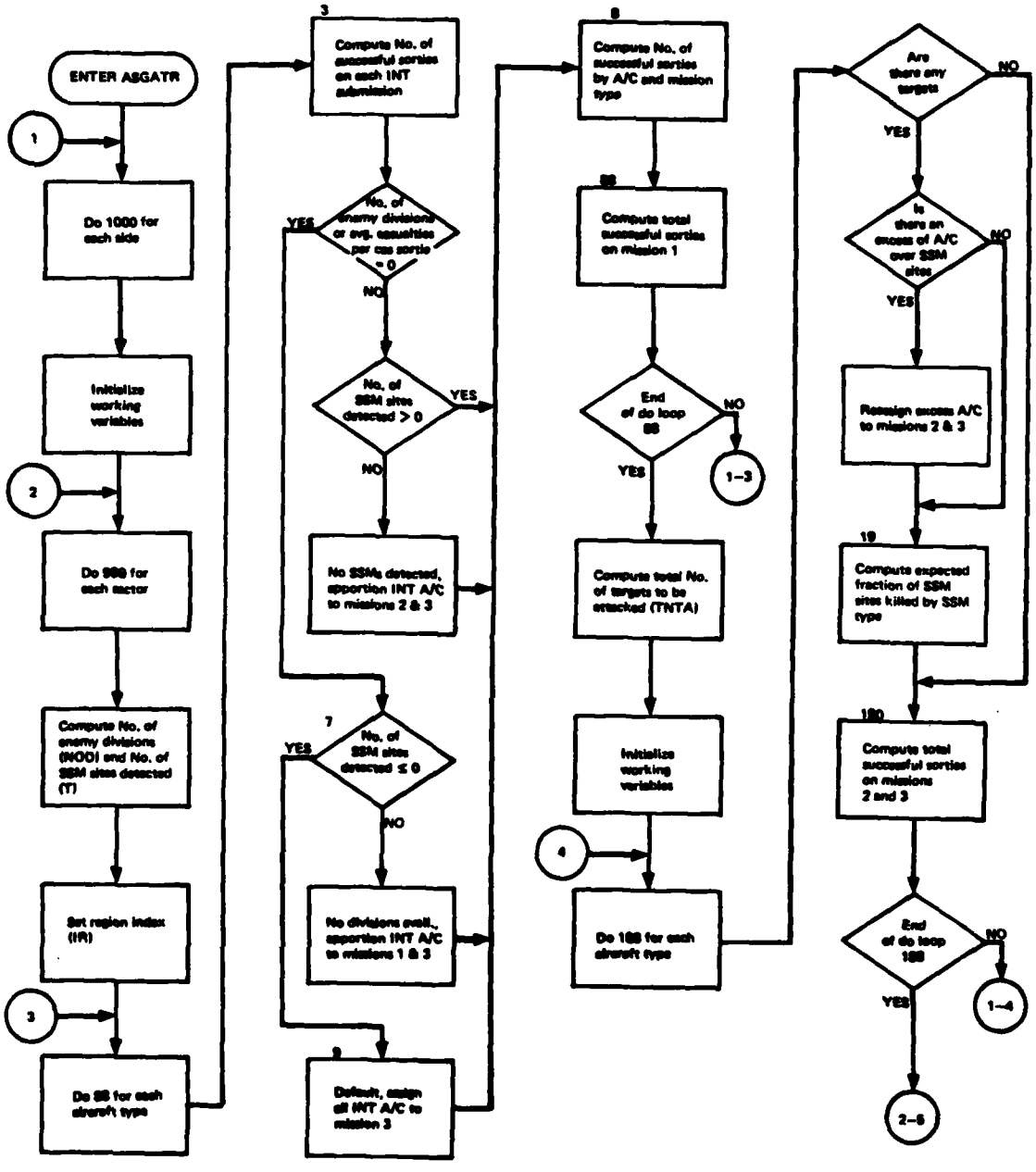


Figure 121. Flowchart of TACWAR Routine ASGATR (Part 1 of 2)

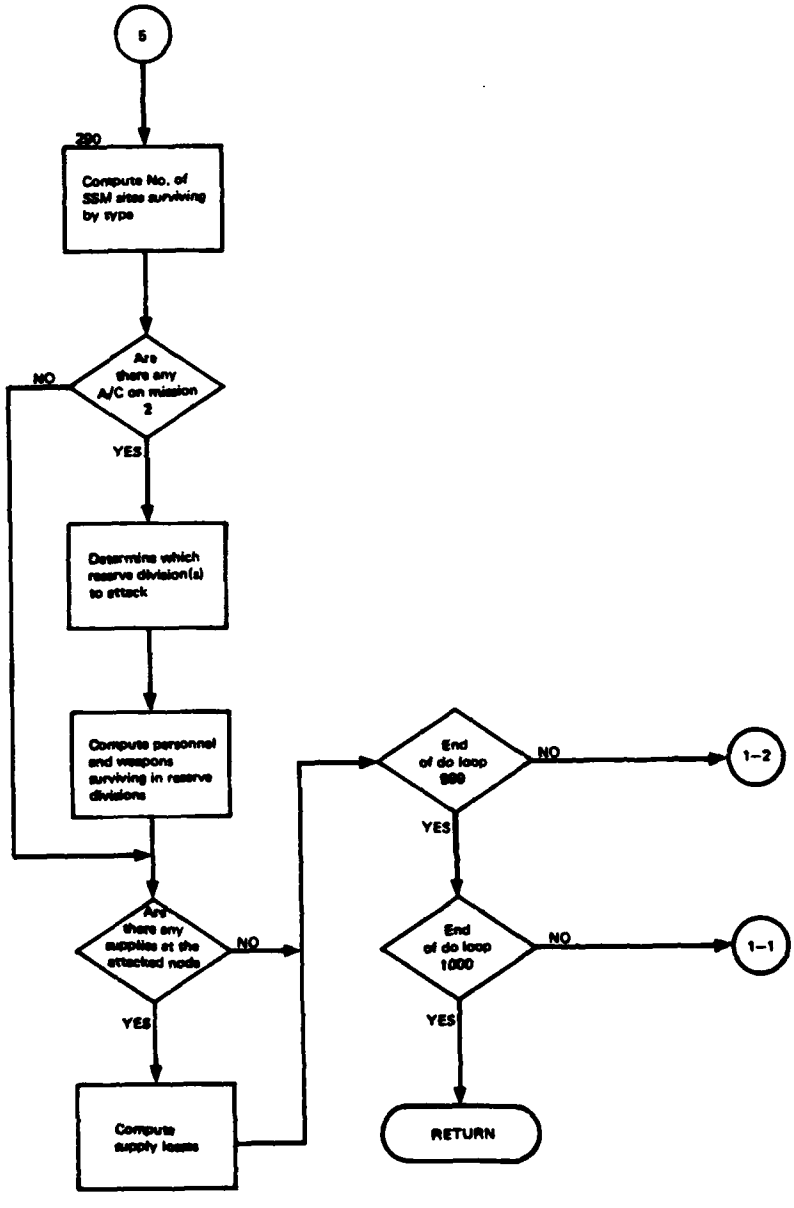


Figure 121. Flowchart of TACWAR Routine ASGATR (Part 2 of 2)

Figure 122. Flowchart of TACWAR Routine PSAIR

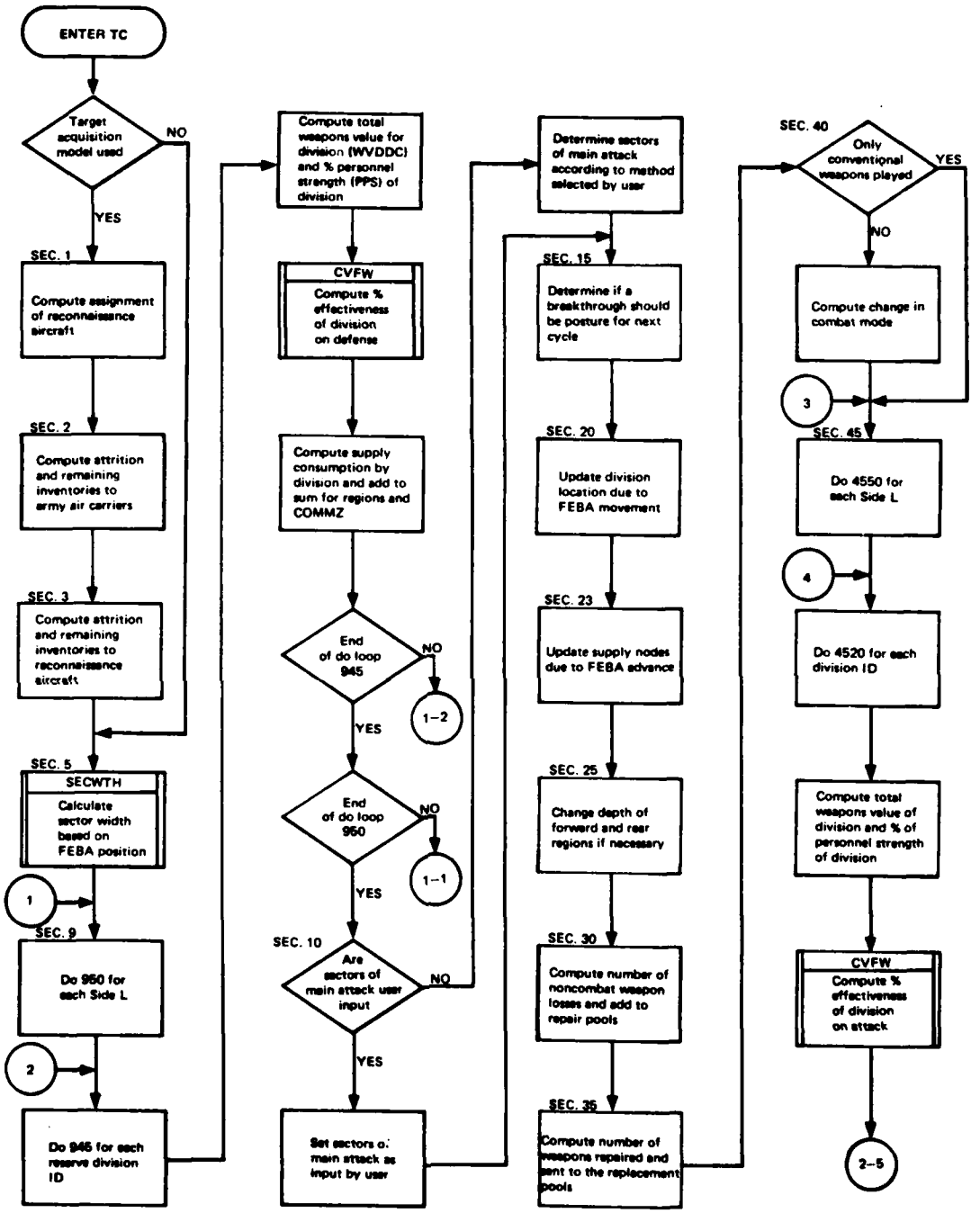


Figure 123. Flowchart of TACWAR Routine TC (Part 1 of 3)

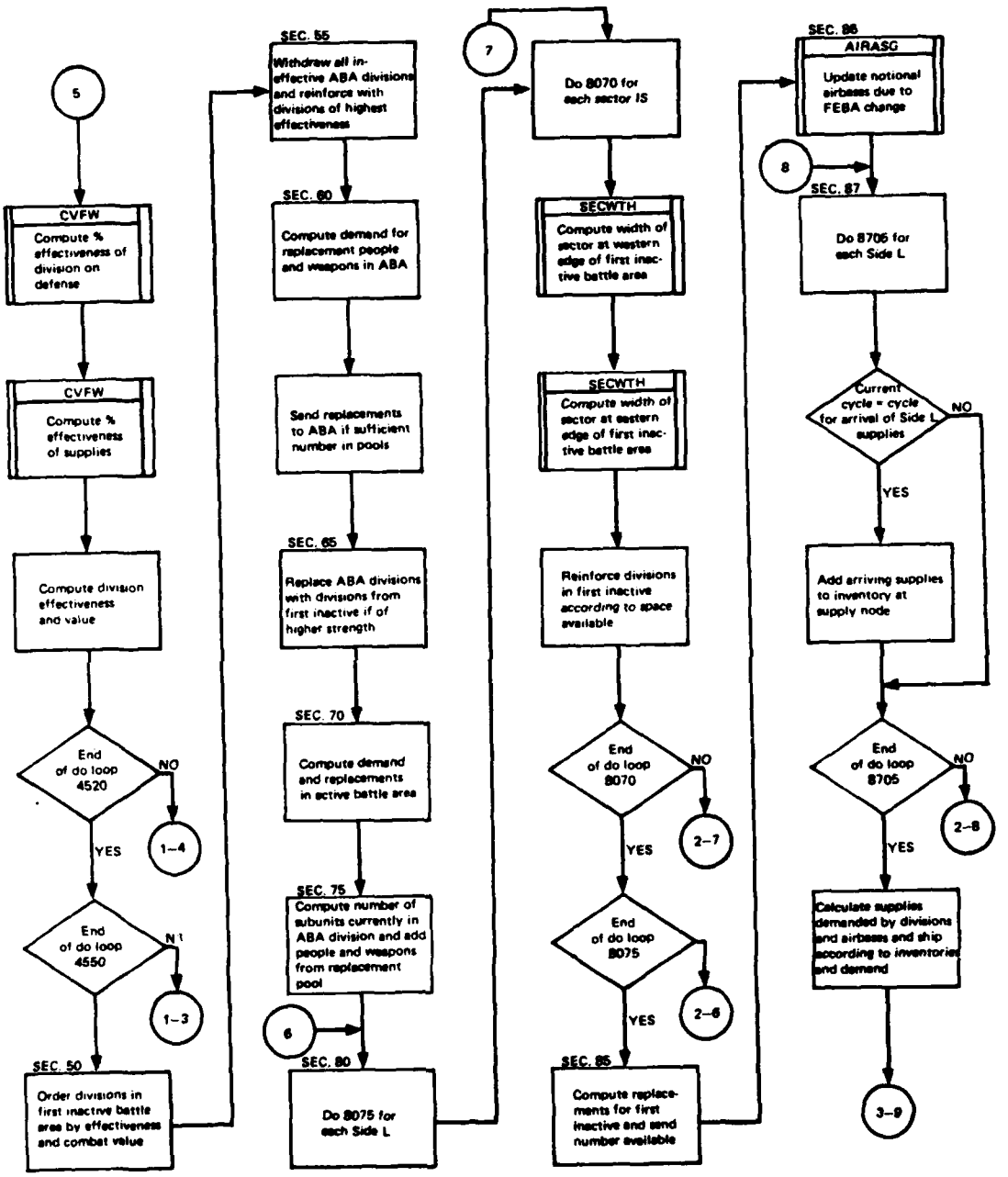


Figure 123. Flowchart of TACWAR Routine TC (Part 2 of 3)

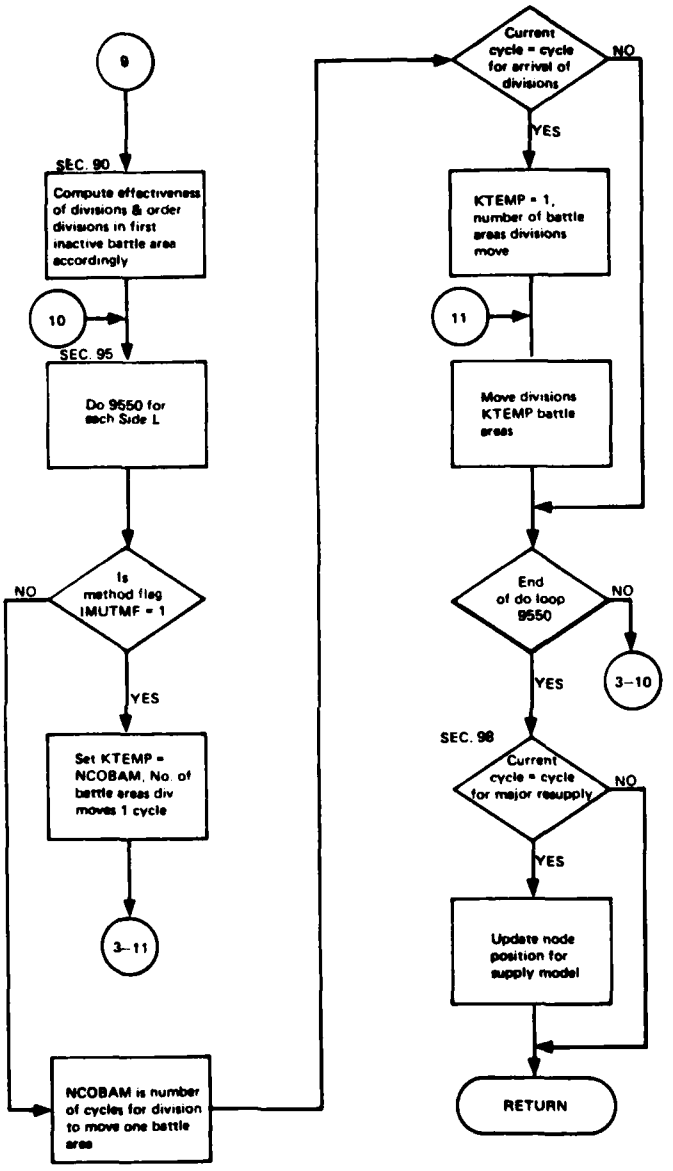


Figure 123. Flowchart of TACWAR Routine TC (Part 3 of 3)

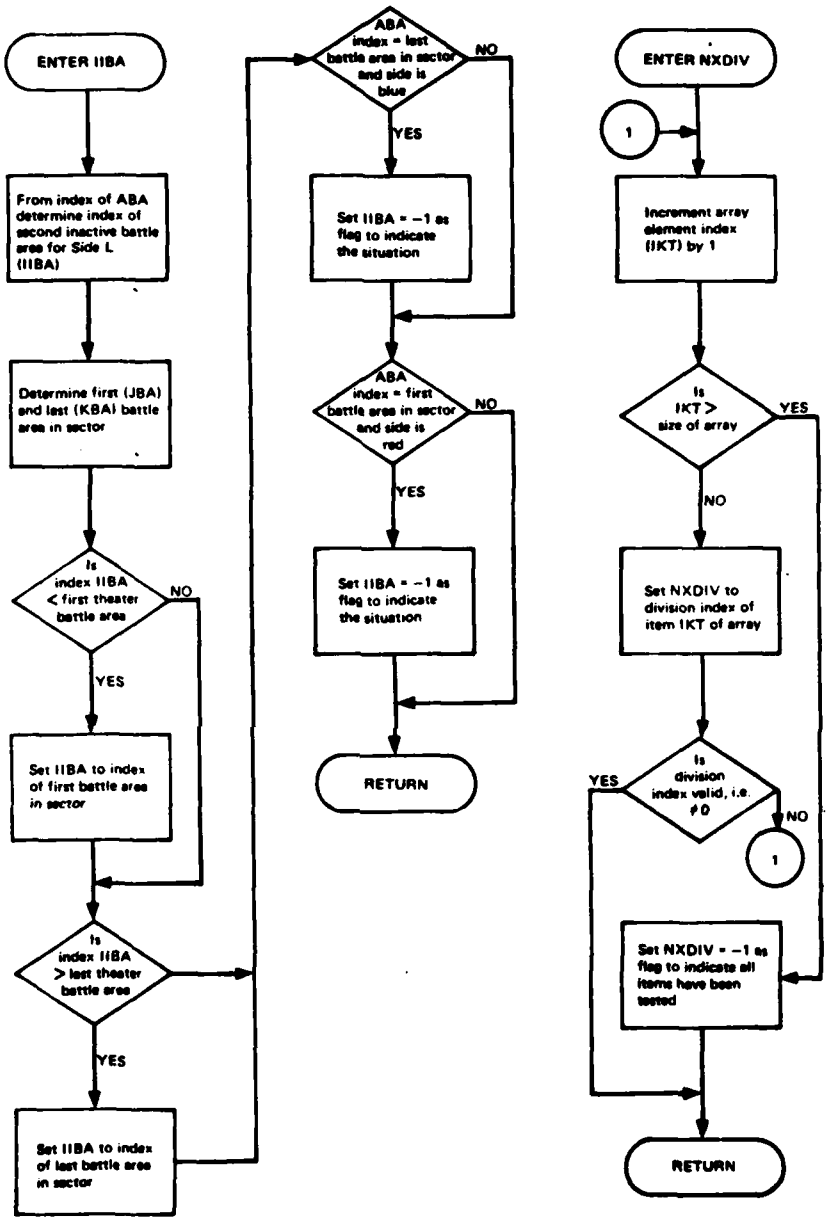


Figure 124. Flowcharts of TACWAR Routines IIBA and NXDIV

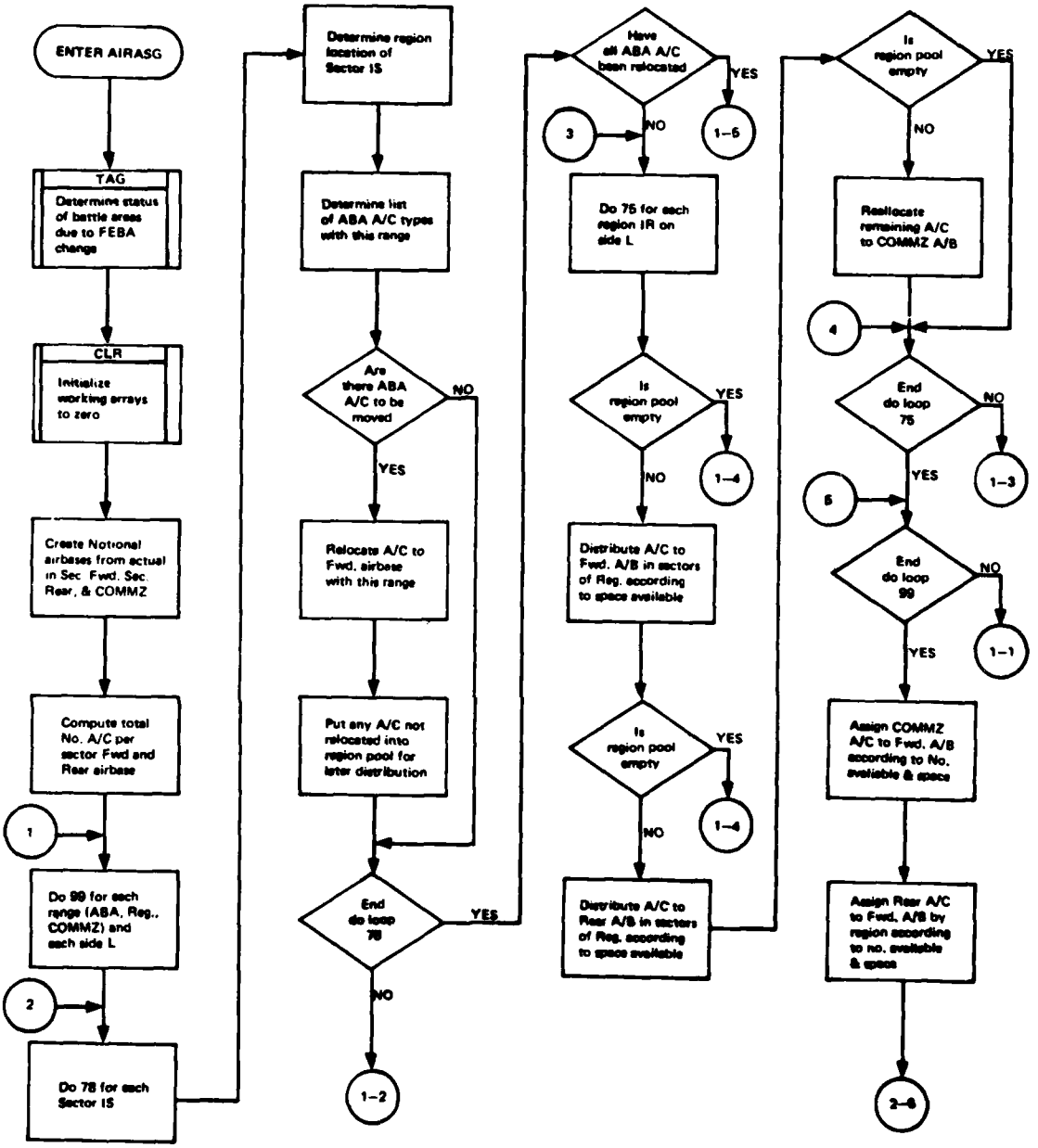


Figure 125. Flowchart of TACWAR Routine AIRASG (Part 1 of 2)

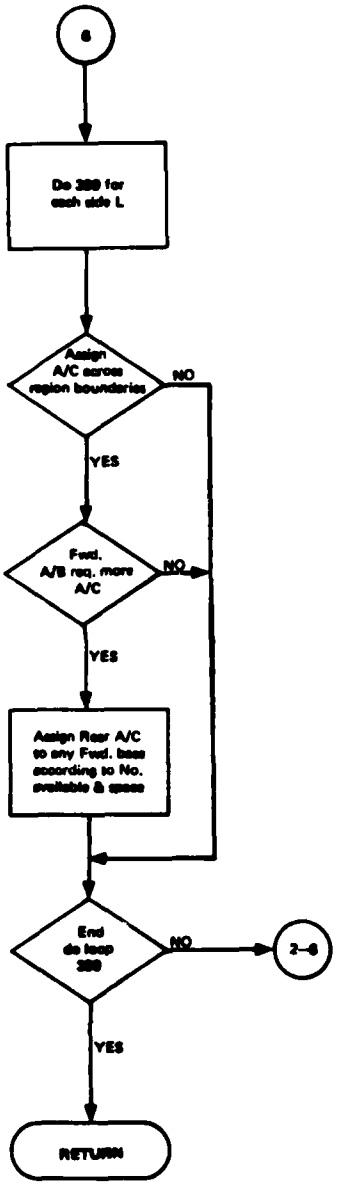


Figure 125. Flowchart of TACWAR Routine AIRASG (Part 2 of 2)

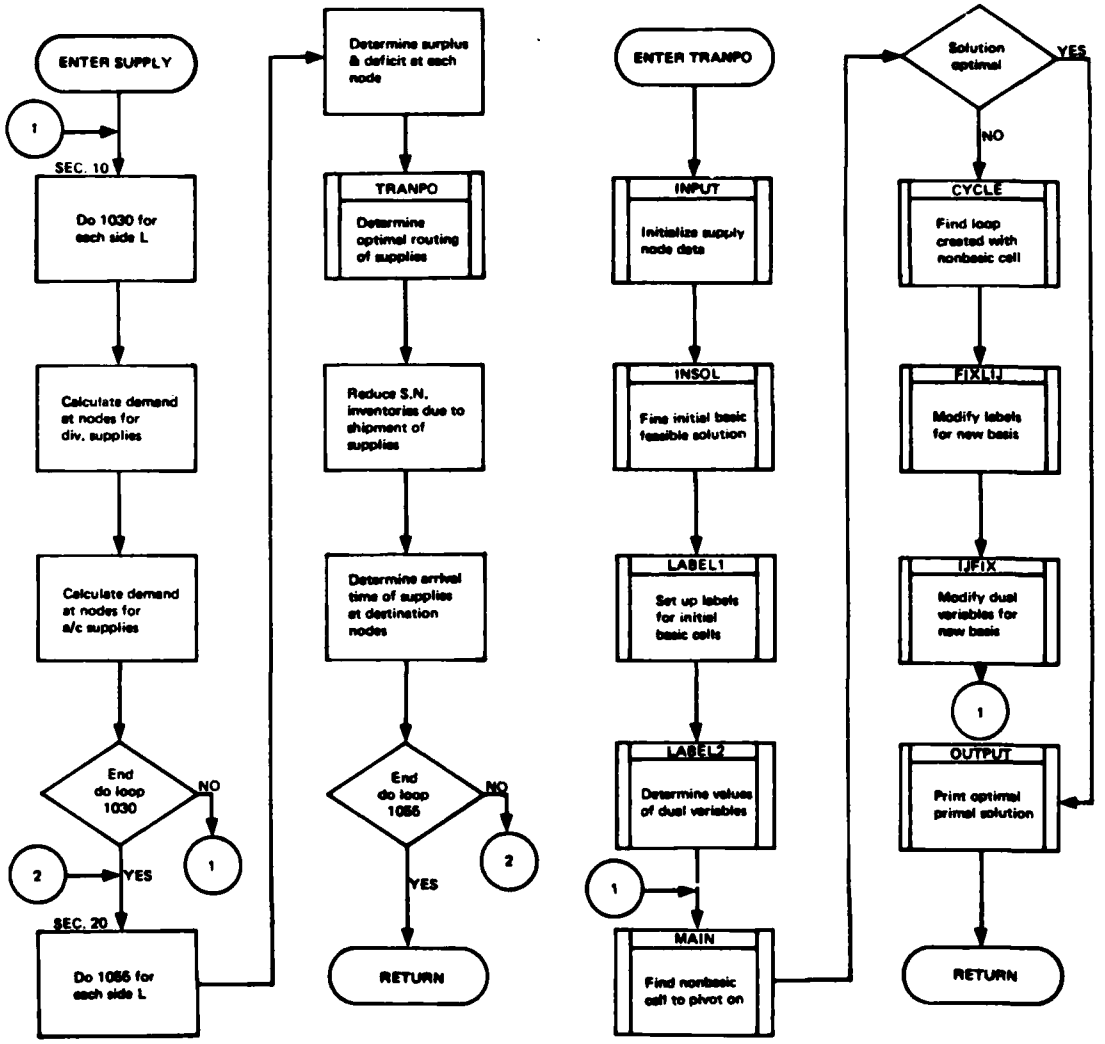


Figure 126. Flowcharts of TACWAR Routines SUPPLY and TRANPO

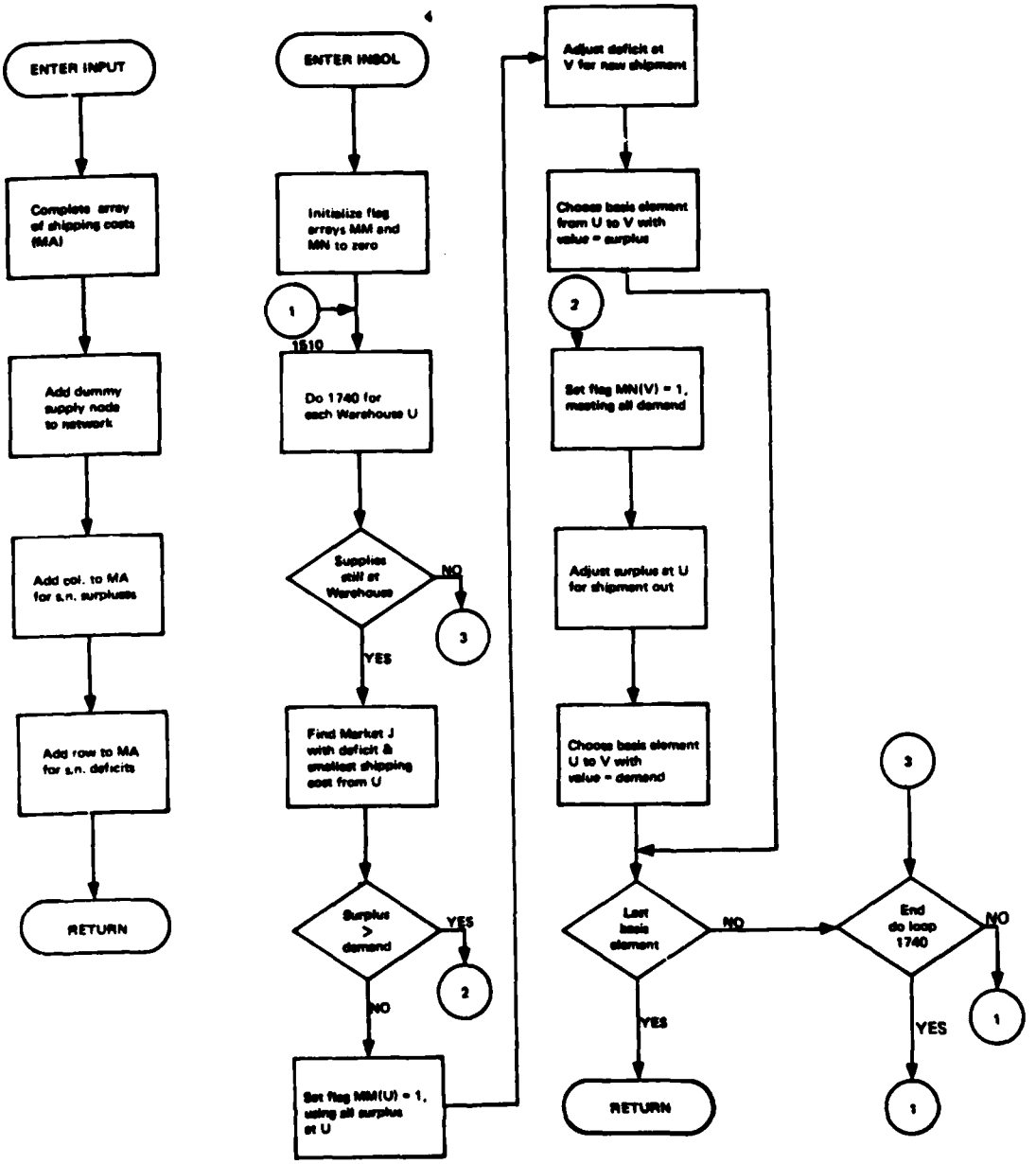


Figure 127. Flowcharts of TACWAR Routines INPUT and INSOL

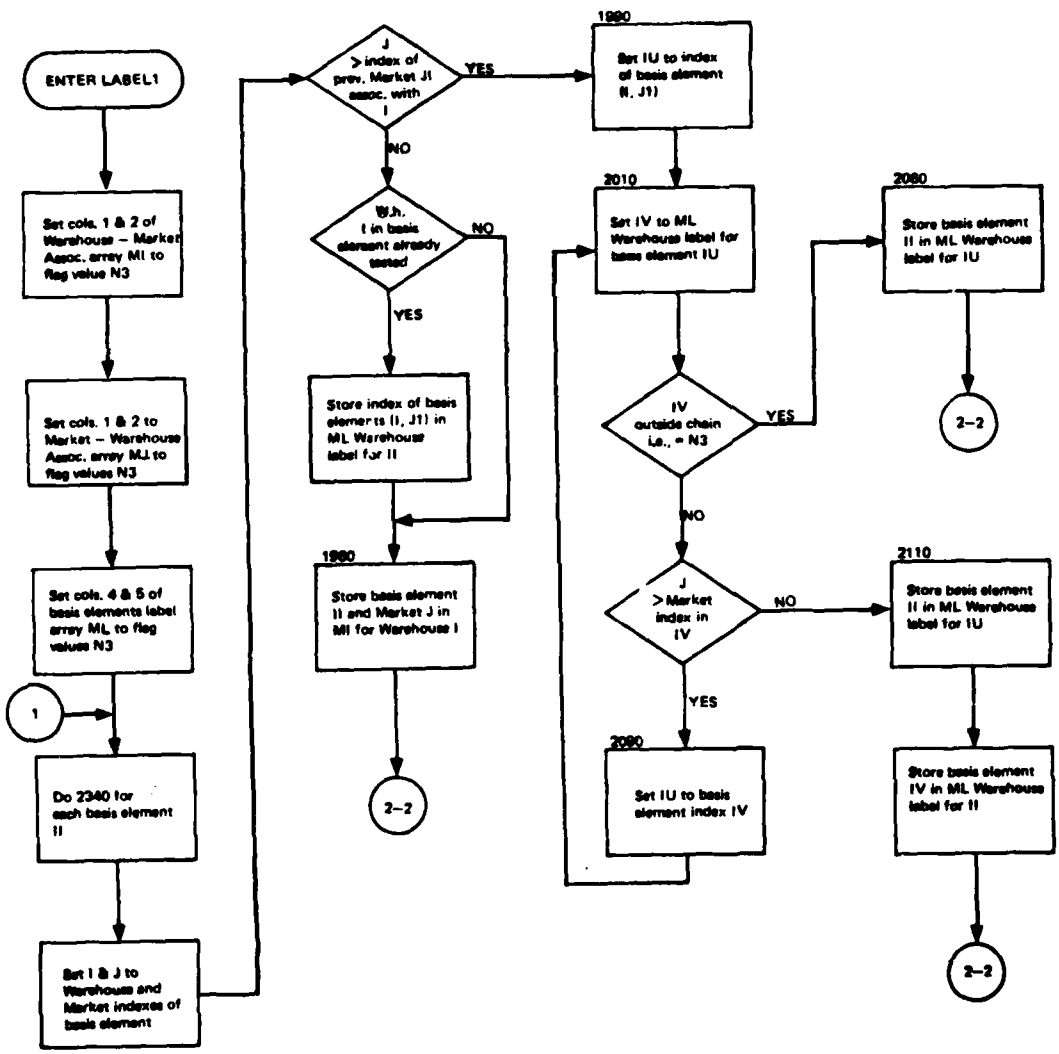


Figure 128. Flowchart of TACWAR Routine LABEL1 (Part 1 of 2)

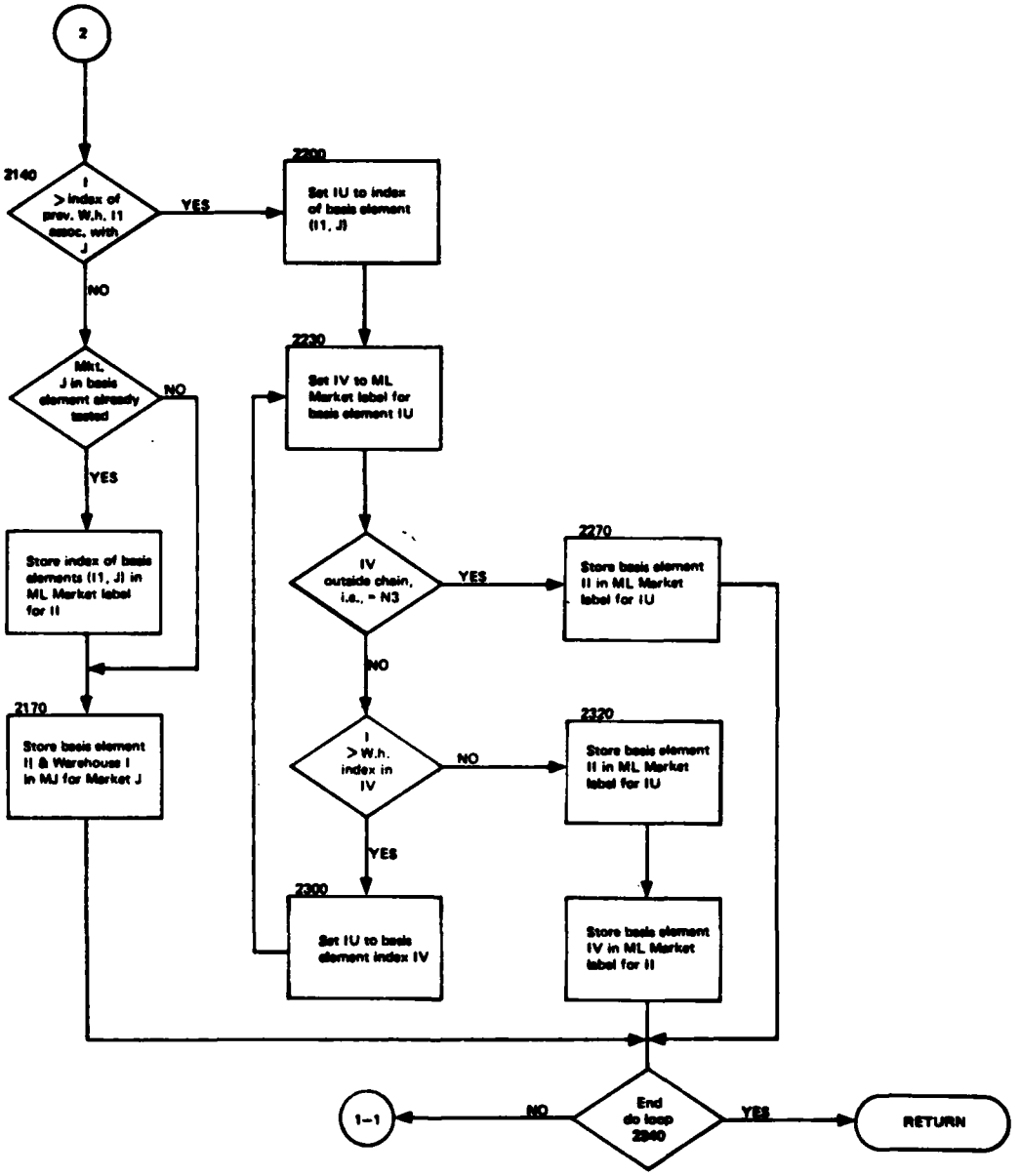


Figure 128. Flowchart of TACWAR Routine LABEL1 (Part 2 of 2)

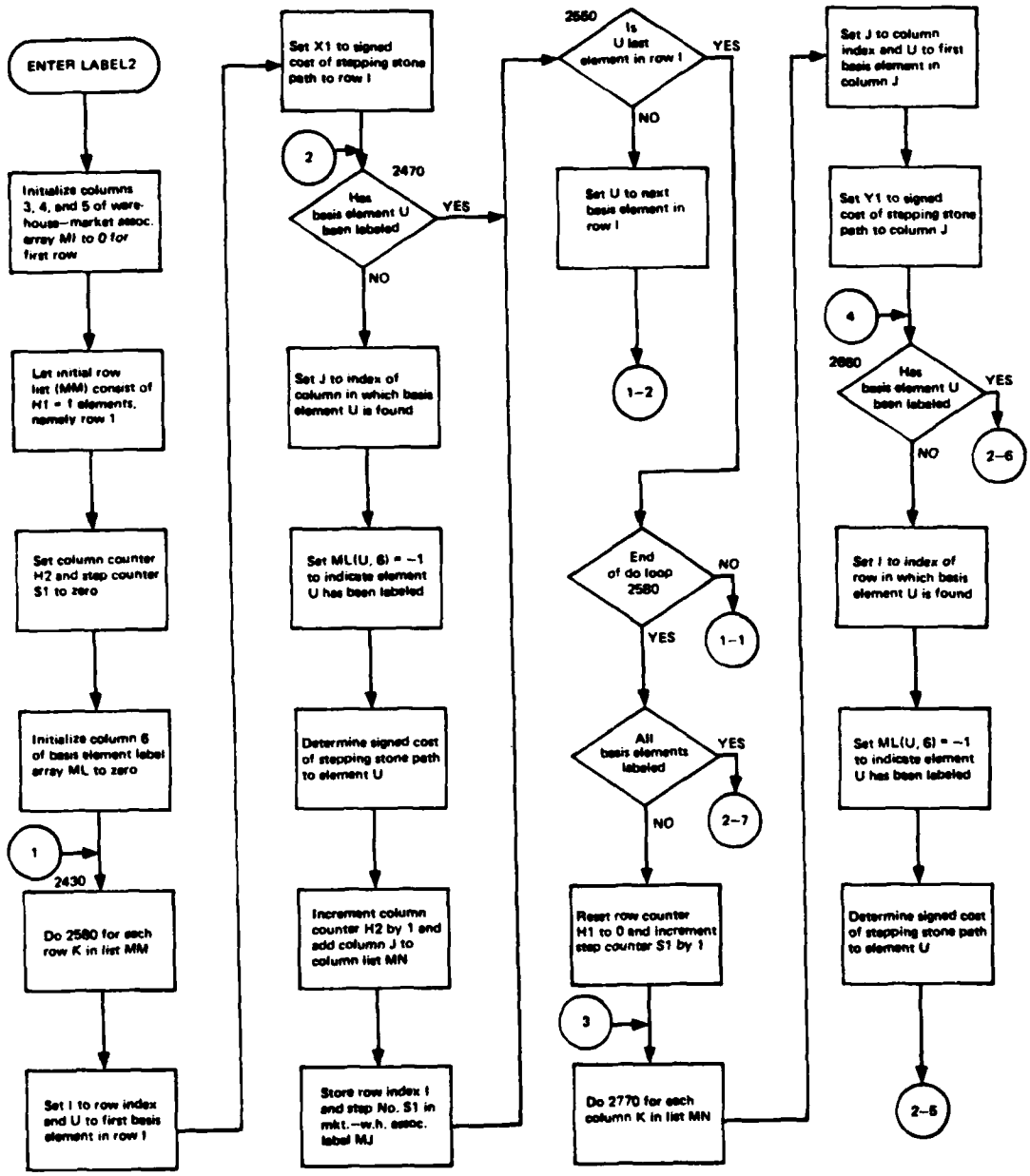


Figure 129. Flowchart of TACWAR Routine LABEL2 (Part 1 of 2)

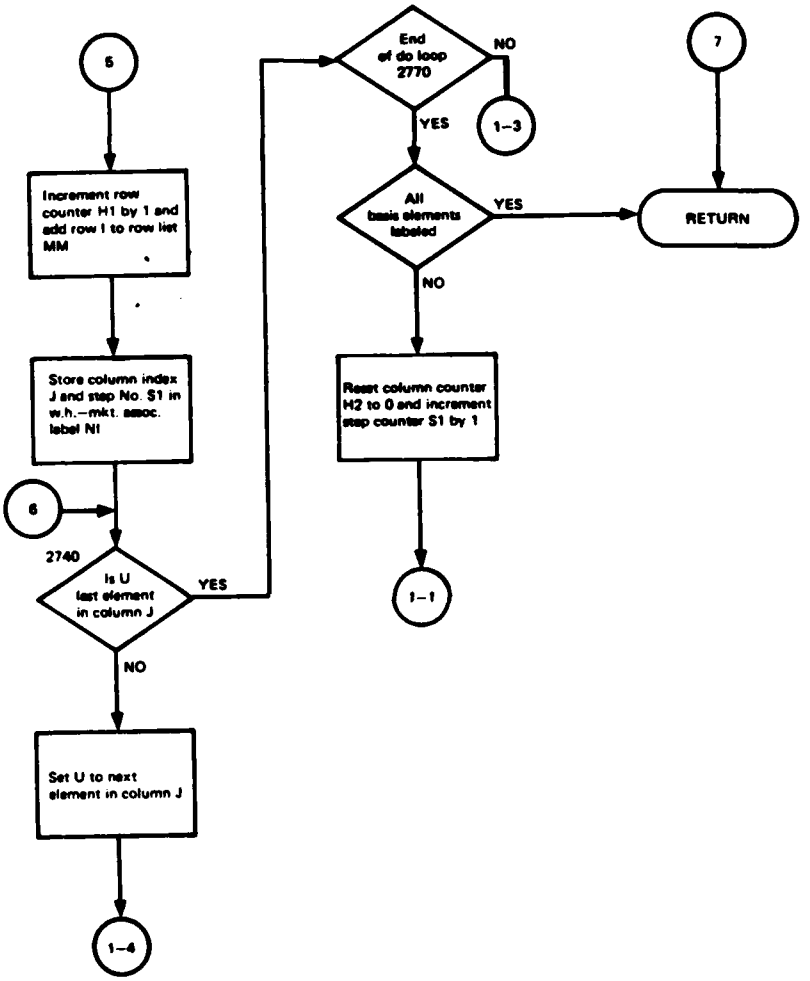


Figure 129. Flowchart of TACWAR Routine LABEL2. (Part 2 of 2)

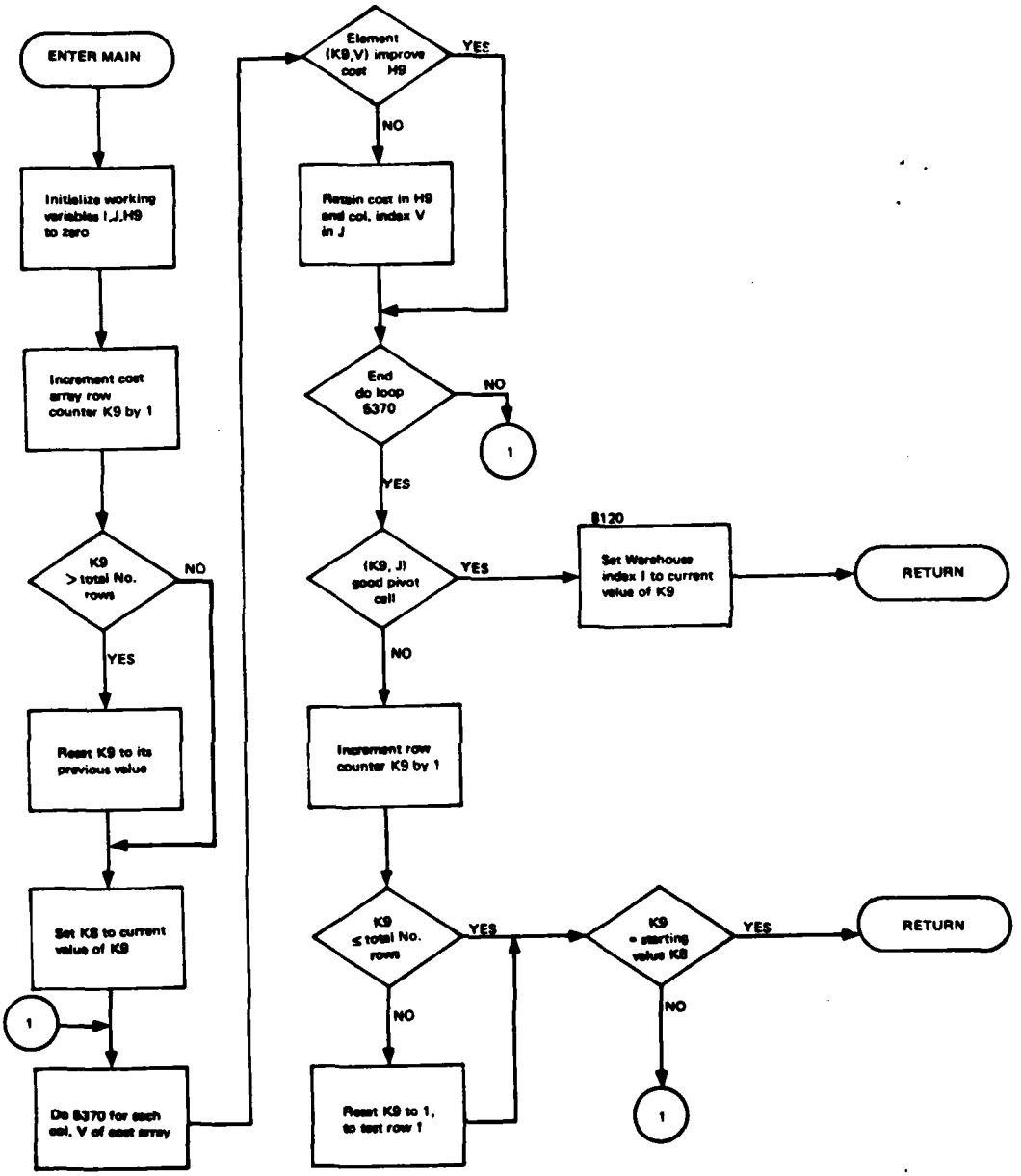


Figure 130. Flowchart of TACWAR Routine MAIN

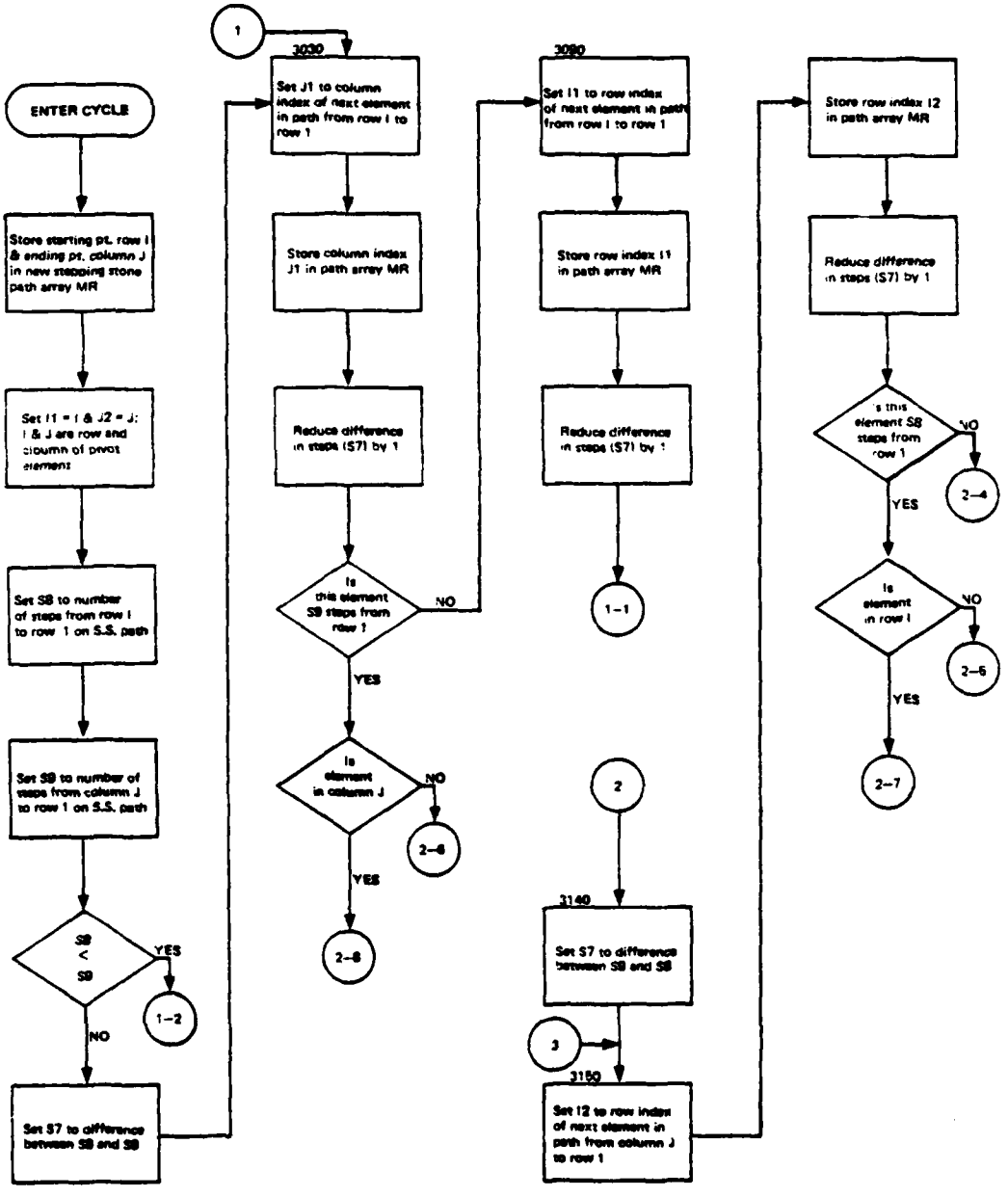


Figure 131. Flowchart of TACWAR Routine CYCLE (Part 1 of 3)

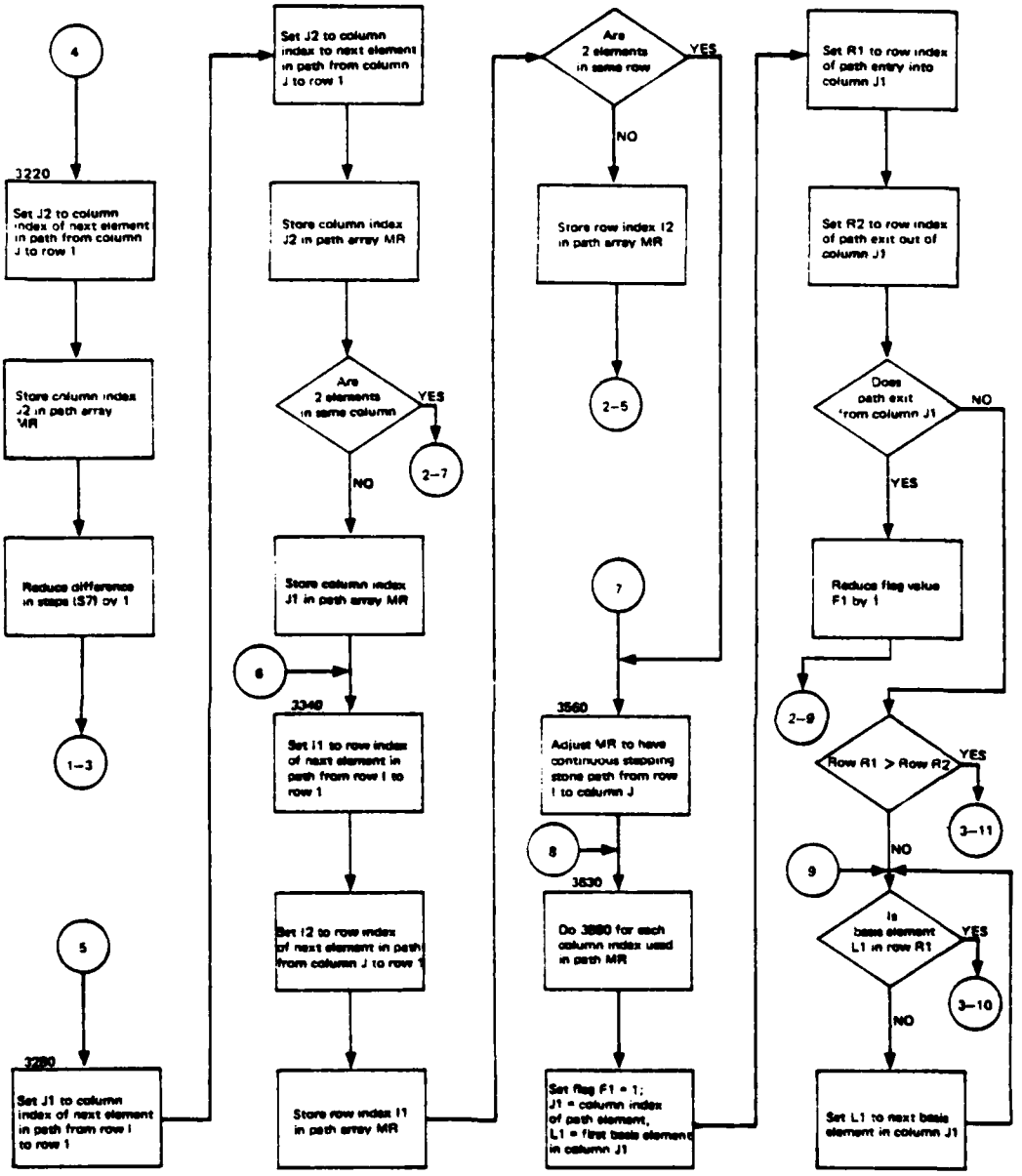


Figure 131. Flowchart of TACWAR Routine CYCLE (Part 2 of 3)

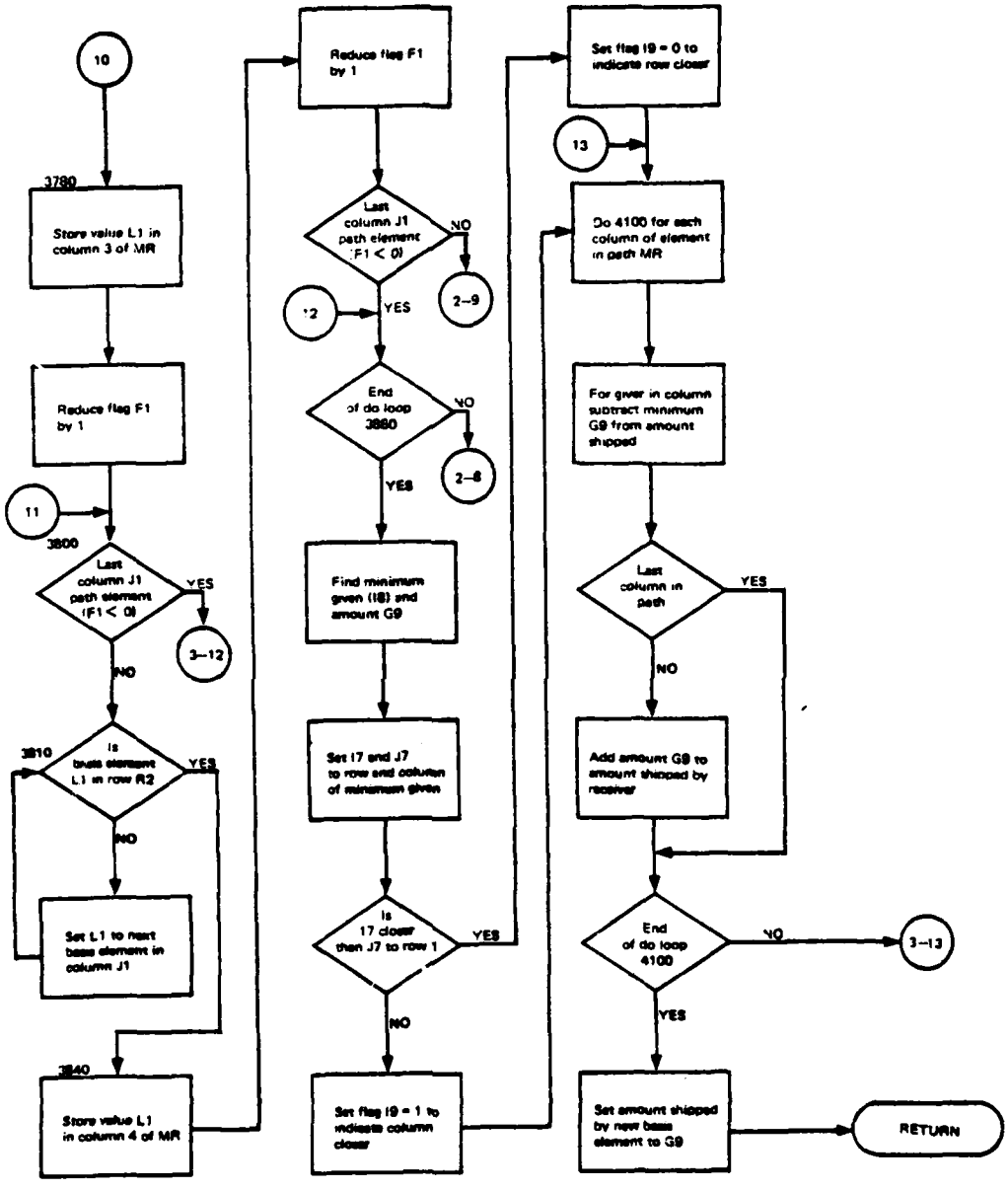


Figure 131. Flowchart of TACWAR Routine CYCLE (Part 3 of 3)

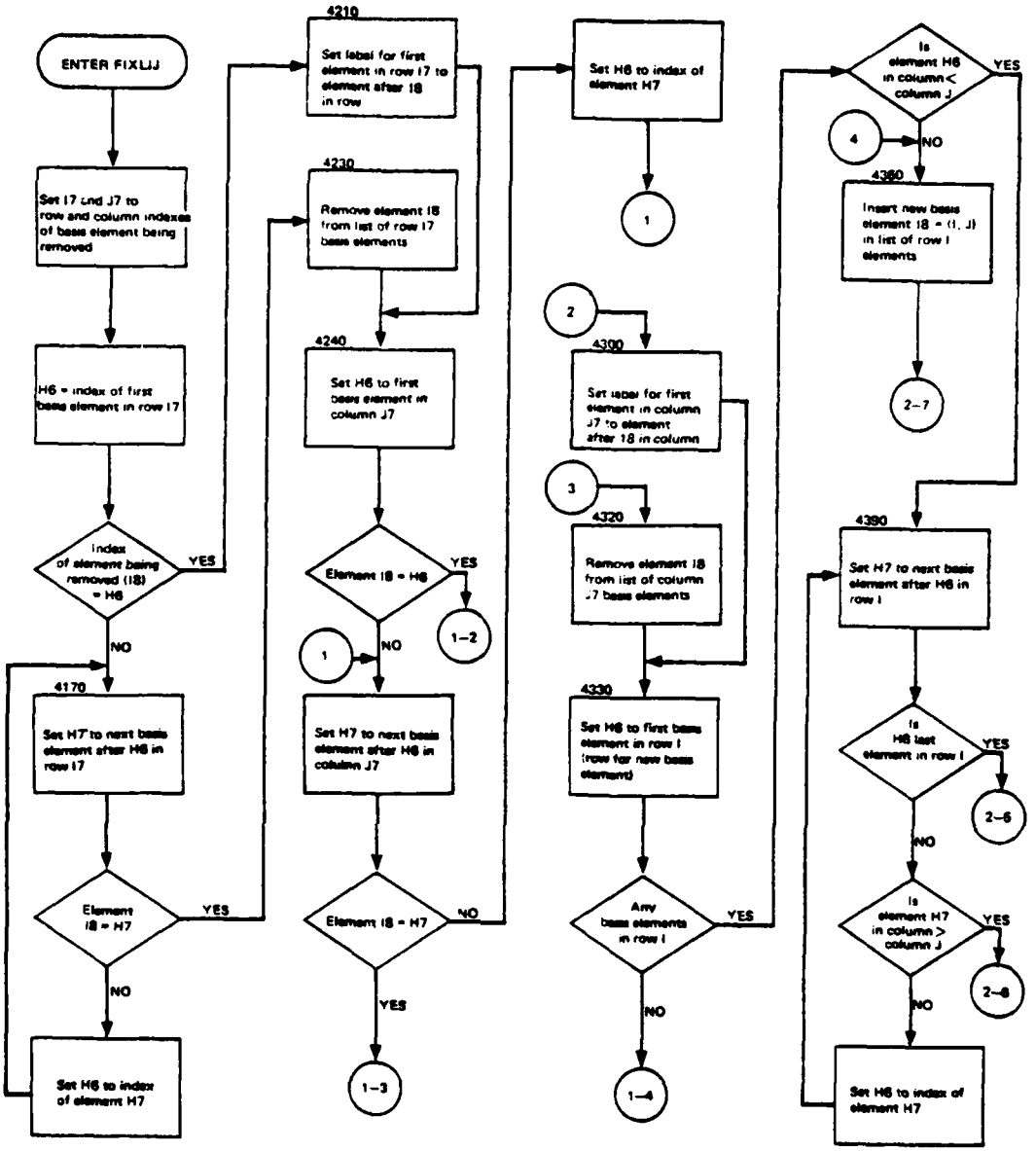


Figure 132. Flowchart of TACWAR Routine FIXLIJ (Part 1 of 2)

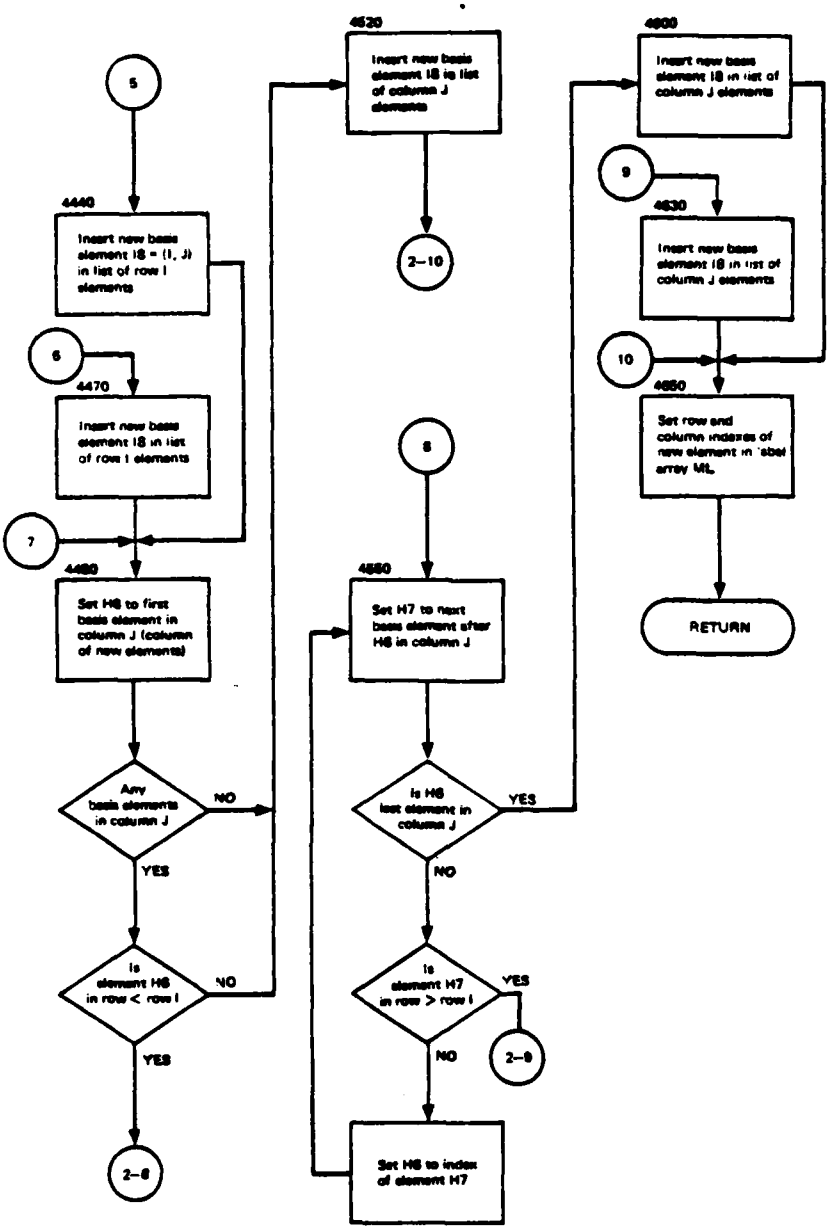


Figure 132. Flowchart of TACWAR Routine FIXLIJ (Part 2 of 2)

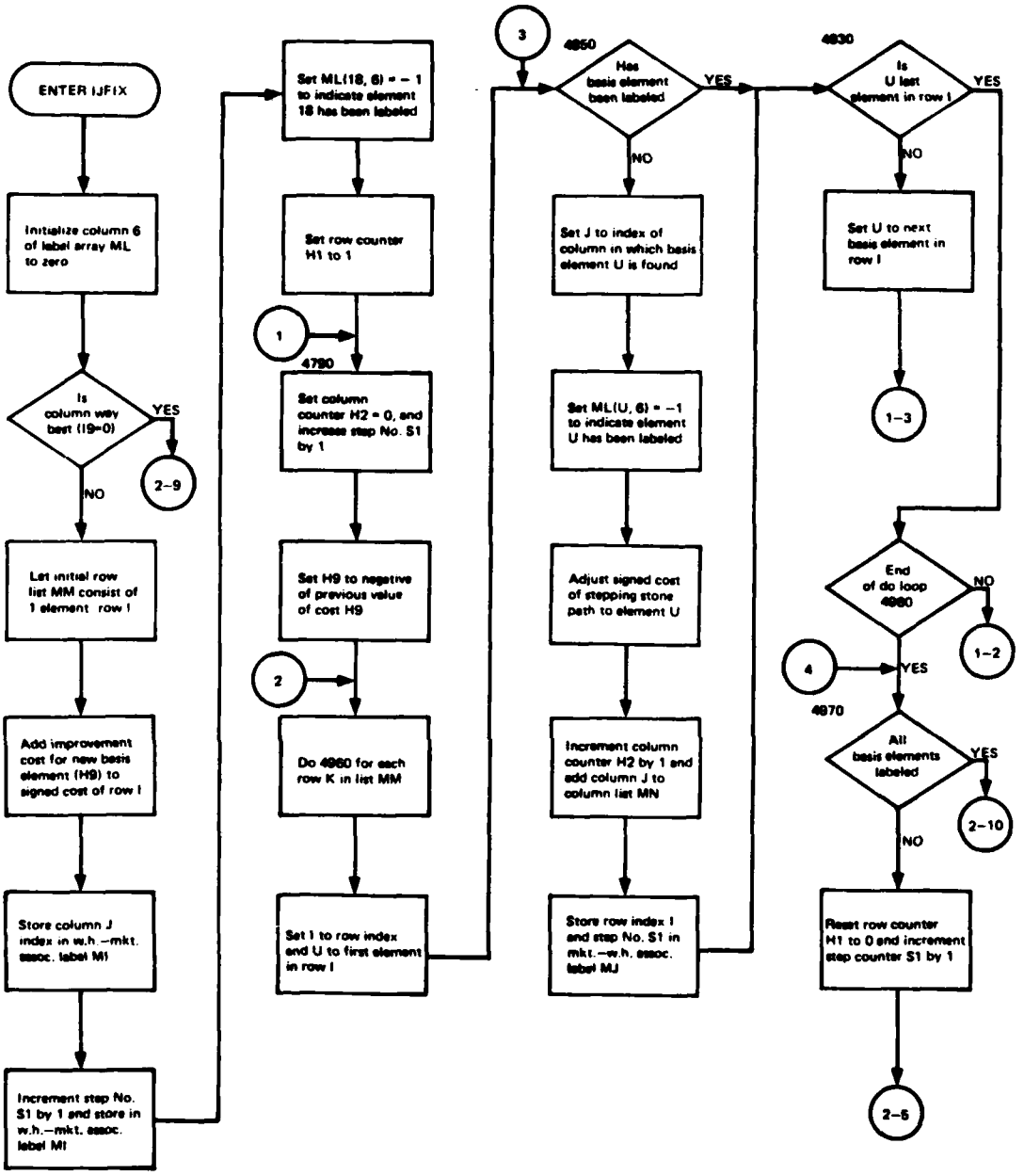


Figure 133. Flowchart of TACWAR Routine IJFIX (Part 1 of 2)

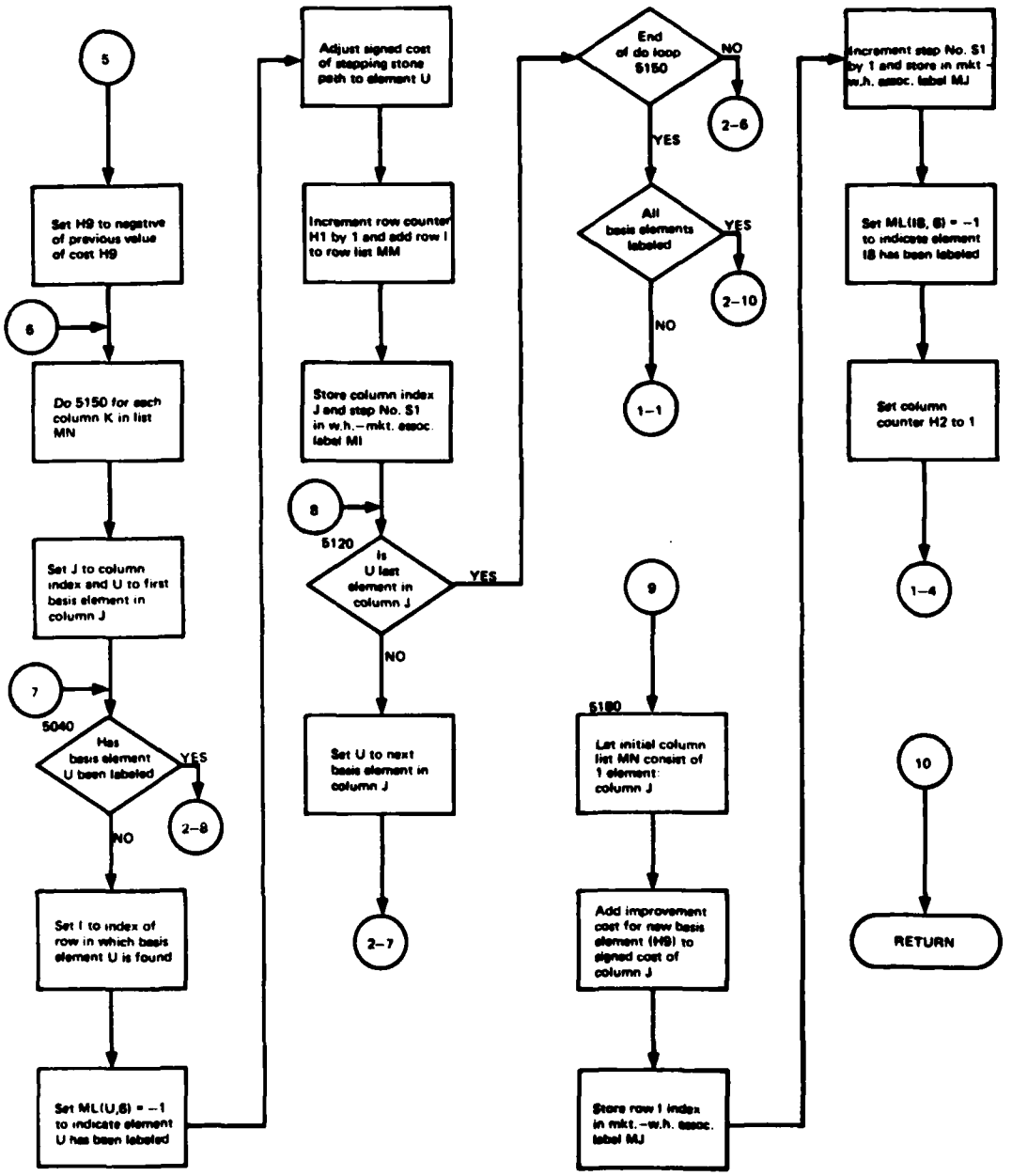


Figure 133. Flowchart of TACWAR Routine IJFIX (Part 2 of 2)

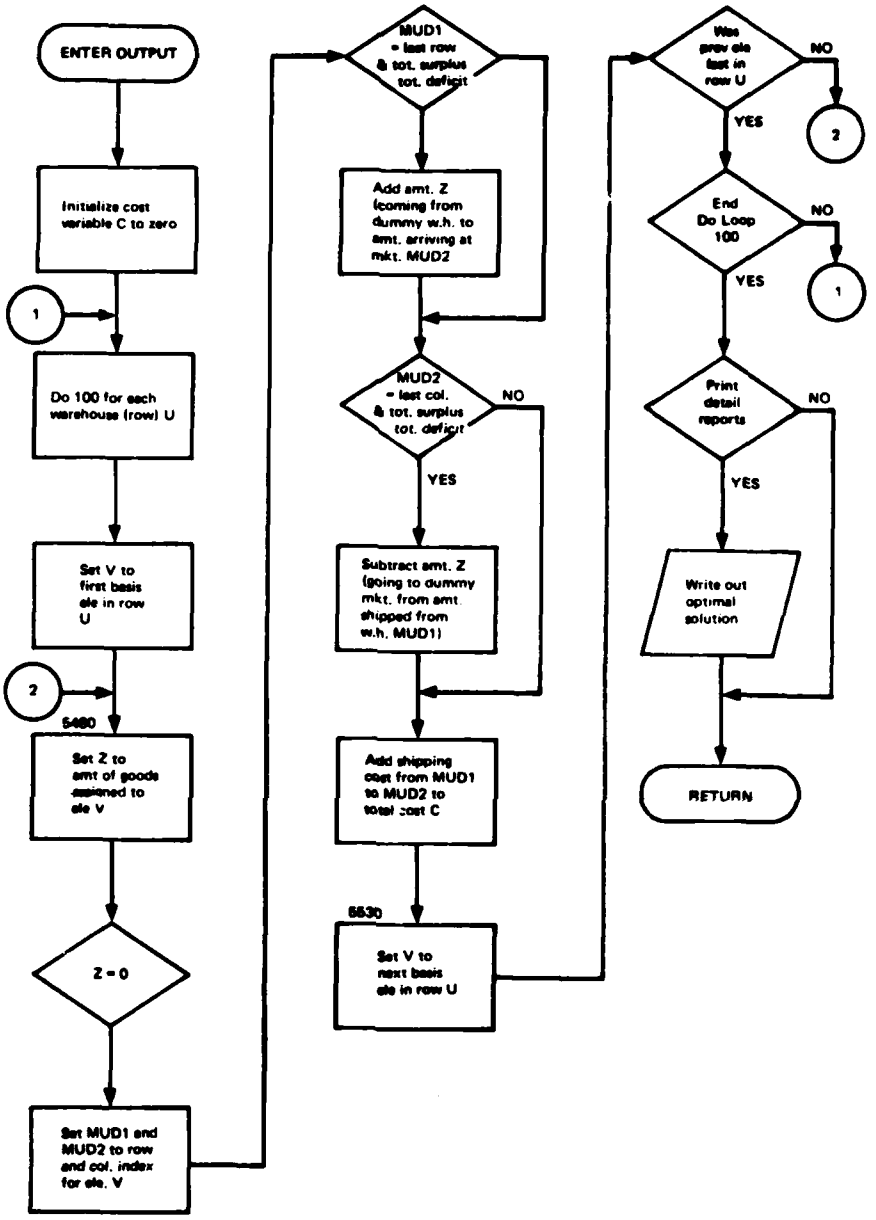


Figure 134. Flowchart of TACWAR Routine OUTPUT

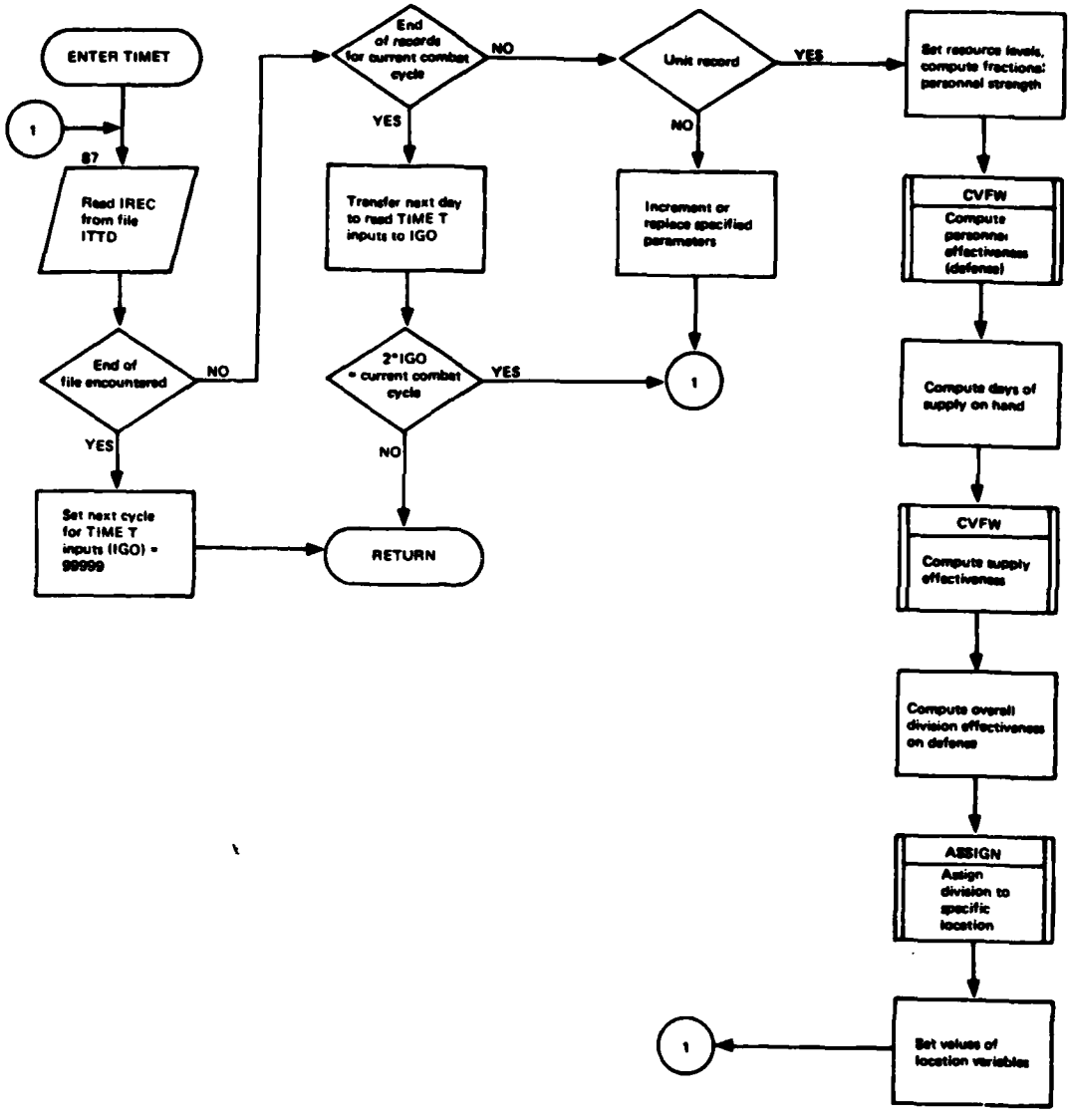


Figure 135. Flowchart of TACWAR Routine TIMET

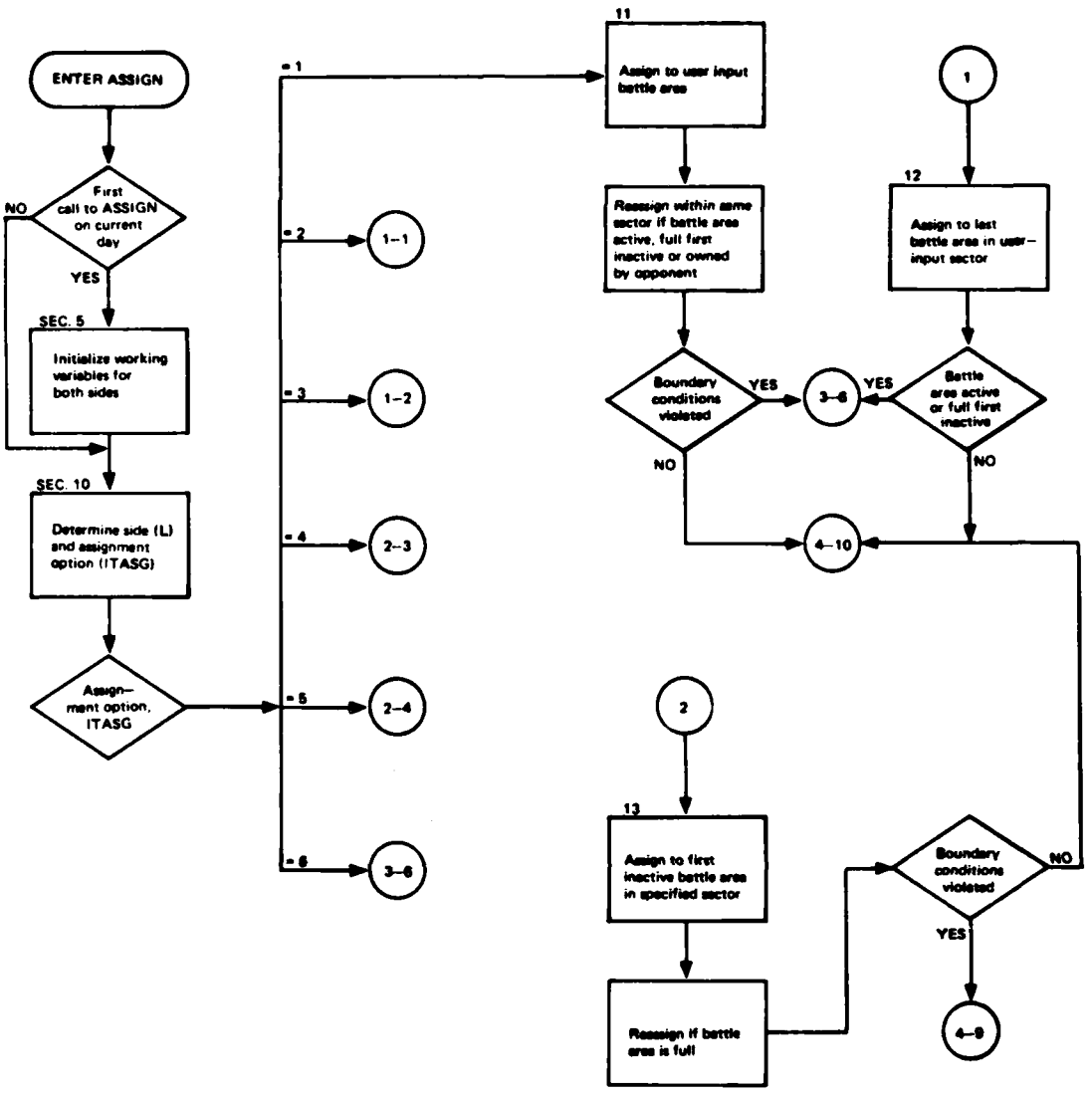


Figure 136. Flowchart of TACWAR Routine ASSIGN (Part 1 of 4)

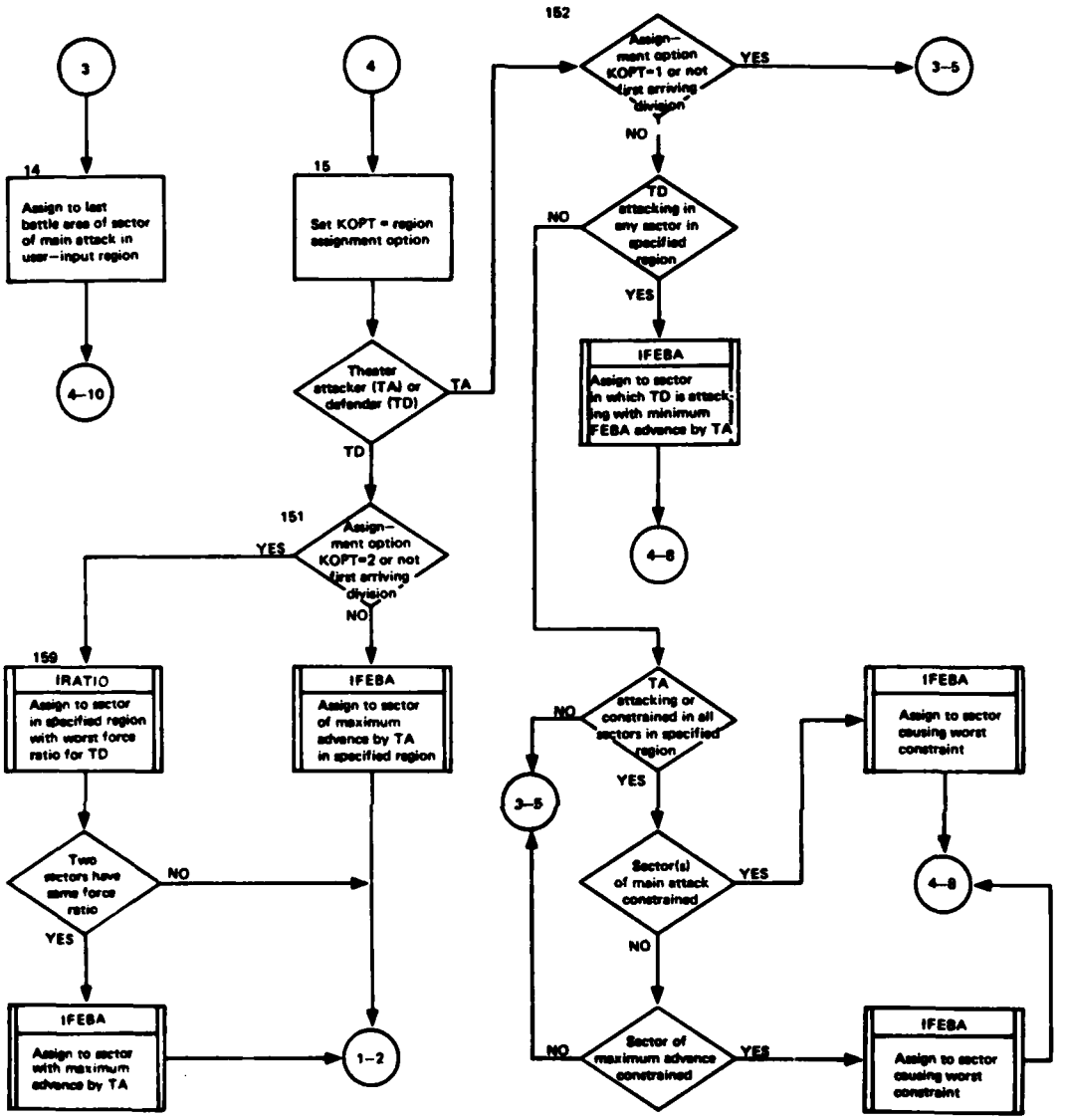


Figure 136. Flowchart of TACWAR Routine ASSIGN (Part 2 of 4)

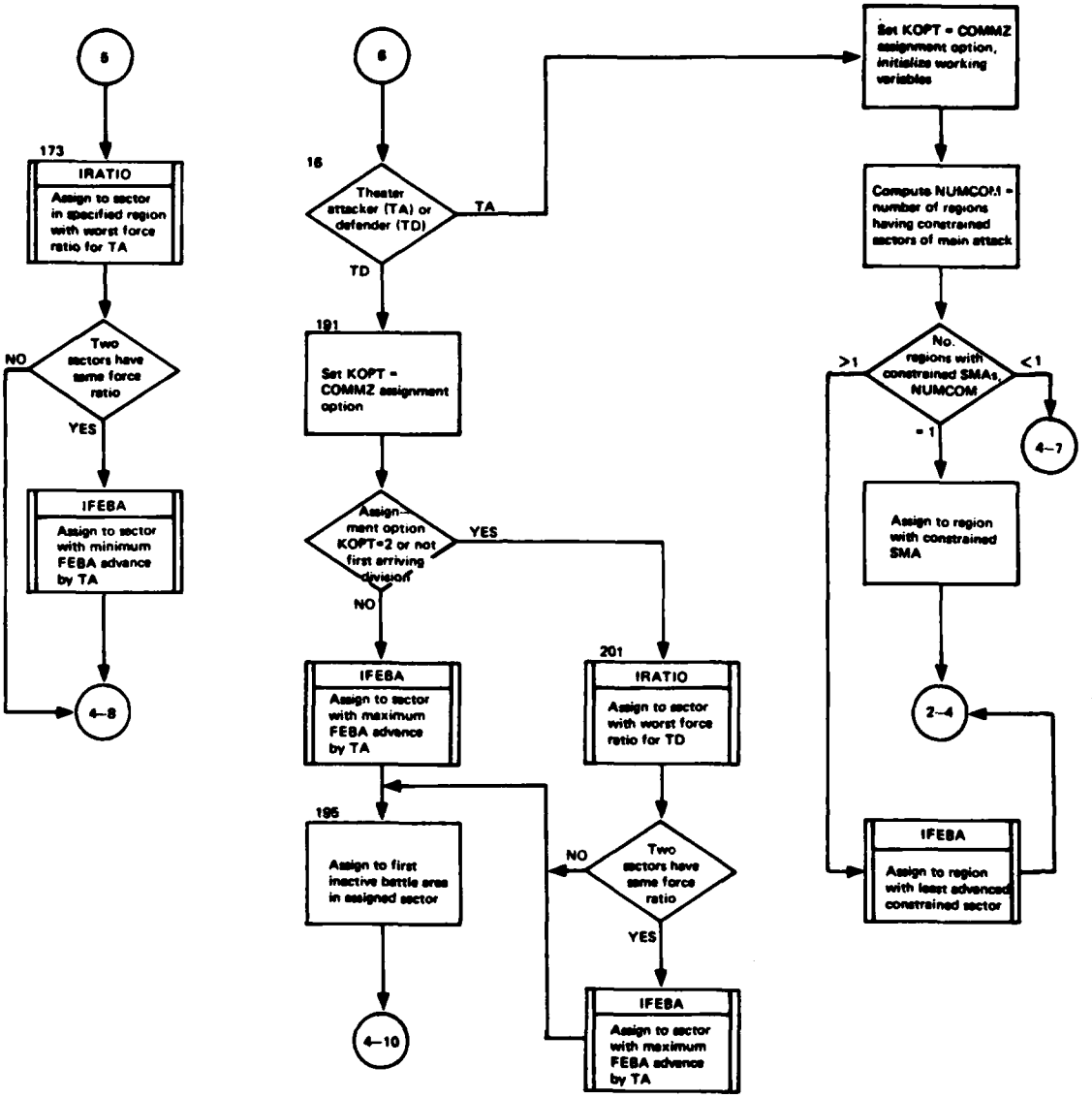


Figure 136. Flowchart of TACWAR Routine ASSIGN (Part 3 of 4)

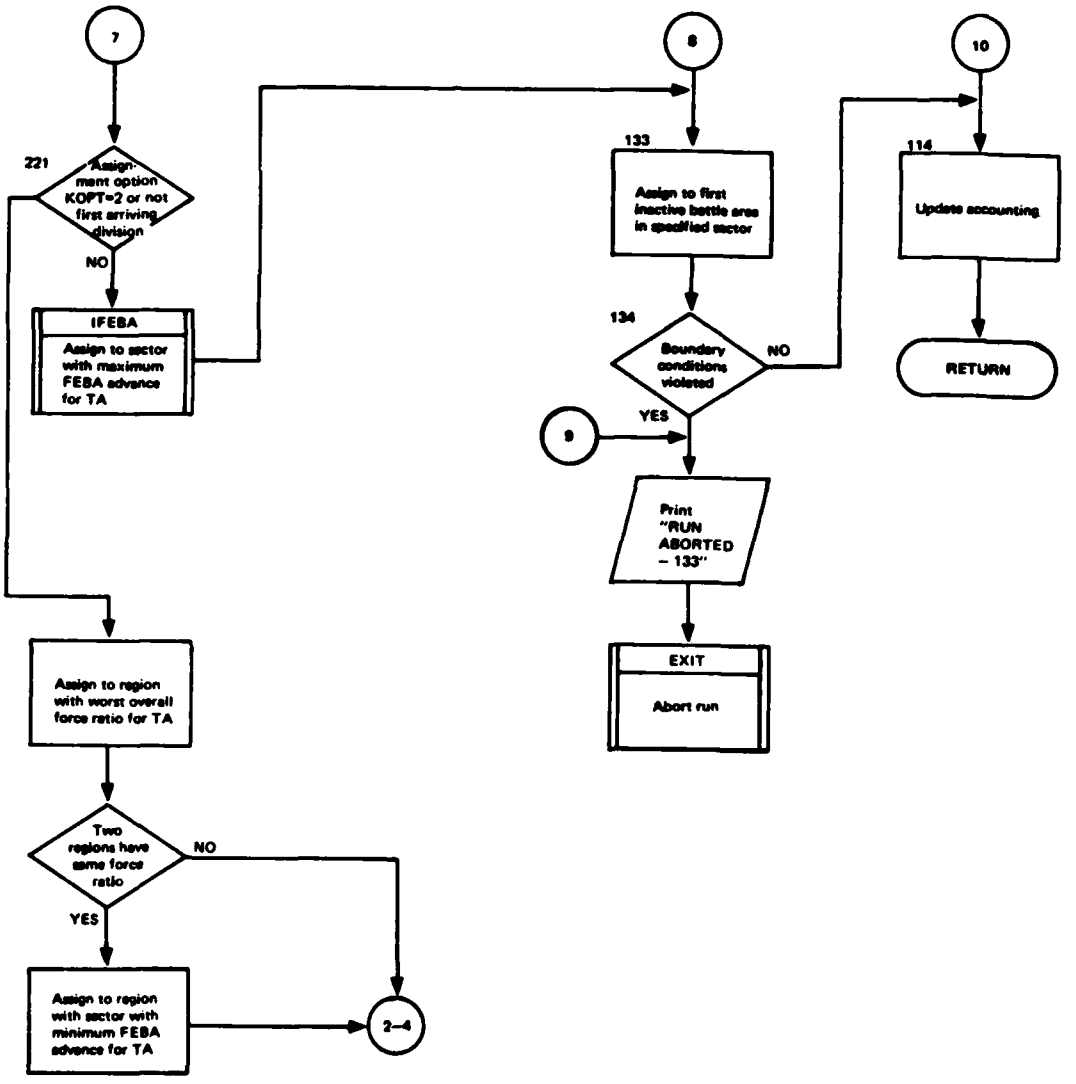


Figure 136. Flowchart of TACWAR Routine ASSIGN (Part 4 of 4)

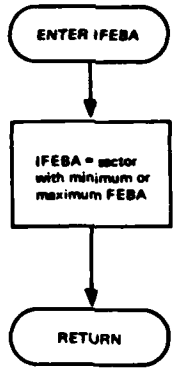


Figure 137. Flowcharts of TACWAR Routines IRATIO and IFEBA

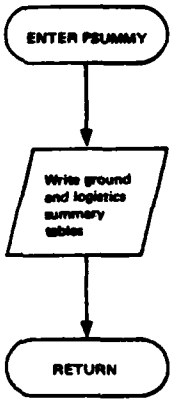


Figure 138. Flowchart of TACWAR Routine PSUMMY

APPENDIX B

INSTRUCTIONS FOR OBTAINING SOURCE LISTINGS FOR TACWAR

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APPENDIX B

Users desiring copies of the source coding of the TACWAR system programs should contact the Manager, General Purpose Forces Division (C315), Command and Control Technical Center, The Pentagon, Washington, D.C.

APPENDIX C

SOURCE LISTING OF PREPROCESSOR ROUTINE COMM

```
C     PROGRAM COMP AND ITS TWO SUBROUTINES IGF AND RD PROCESS THE
C     COMMON BLOCK AND EXCEPTION STATEMENTS TO PRODUCE DATA STATEMENTS
C     FOR THE TACNAR INPUT ROUTINE INP.  THESE DATA STATEMENTS DESCRIBE
C     CHARACTERISTICS OF THE VARIABLES IN COMMON AND THEIR RELATIVE
C     LOCATION WITHIN THE COMMON BLOCK.
      CHARACTER IVV*42(1024)
      DIMENSION IV(1024,7),NOPR(5),IV1(7,1024)
      EQUIVALENCE (IV1,IVV)
      DATA (NOPR(J),J=1,5)/6HINCREM,4HREAL,5HALPHA,6HINTGER,
     & 3HEND/
      DATA N,MPD,ICOM,IRP,IBLK/2*0,59,45,16/
C     10) PROCESS COMMON BLOCK
      MOT=16
      REWIND 1
C     DETERMINE VARIABLE NAME
    1 CALL IGF(NAME,ITERM,1)
      IF(NAME.EQ.3HEND) GOTO 99
      N=N+1
      IV(N,1)=NAME
      ISIZ=1
      IV(N,2)=1
      IV(N,3)=0
      IV(N,4)=1
      NOD=1
      IF(ITERM.EQ.IBLK) GOTO 2
      IF(ITERM.EQ.ICOM) GOTO 2
C     DETERMINE DIMENSIONS
    3 CALL IGF(NAME,ITERM,2)
      IV(N,NOD+1)=NAME
      ISIZ=ISIZ*NAME
      IF(ITERM.EQ.IRP) GO TO 2
      NOD=NOD+1
      GOTO 3
C     LOAD ARRAY IV WITH STANDARD QUALIFIERS
    2 DECODE(IV(N,1),170) I
  170 FORMAT(R1)
      IV(N,6)=13
      IF ((I.NE.25).AND.(I.LT.33.OR.I.GT.37)) IV(N,6)=20
      IV(N,5)=MPD
      MPD=MPD+ISIZ
      IV(N,7)=400+10*MPD
      GOTO 1
C     20) PROCESS EXCEPTION STATEMENTS
   99 CALL IGF(NAME,ITERM,1)
C     DETERMINE OPERATOR
      DO 101 IGO=1,5
      IJGO=IGO
      IF(NAME.EQ.NOPR(IGO)) GO TO 999
  101 CONTINUE
C     DETERMINE VARIABLE NAME
      DO 38 I=1,N
      IF(NAME.EQ.IV(I,1)) GOTO 9
   38 CONTINUE
      WRITE(MOT,500) NAME,NOPR(JGO)
  500 FORMAT('WARNING: INVALID VARIABLE NAME='A6,' FOR OPERATION 'A6)
```

```
      GO TO 99
  999 IGO=IJGO
      JGO=IGO
      IF(IGO-5)99,888,99
C     ADJUST ARRAY IV ACCORDING TO EXCEPTION
    9 GOTO(4,5,6,7  ),JGO
    4 IV(I,6)=IV(I,6)+1
      GOTO 99
    5 IV(I,6)=MOD(IV(I,6),10)+20
      GO TO 99
    6 IV(I,6)=MOD(IV(I,6),10)+40
      GOTO 99
    7 IV(I,6)=MOD(IV(I,6),10)+10
      GOTO 99
C     30 WRITE DATA STATEMENTS TO FILE 15
  888 CONTINUE
C     FILL UNUSED POSITION OF IV WITH "ZZZZZZ" FOR VARIABLE NAME
      N=N+1
      DO 28 I=N,1024
   28 IV(I,1)=6HZZZZZZ
      MM= 956-N
      WRITE(15,160)N,M,MM
  160 FORMAT(6X,'DATA N/',I4,'/,(IVARG(I,1),I=',I4,', 950)/',
     & I4,10HP6HZZZZZZ/,'                    ')
C     SWITCH INDEXING OF IV BY STORING IN IV1
      DO 700 I=1,N
      DO 710 J=1,7
      IV1(J,I)=IV(I,J)
  710 CONTINUE
  700 CONTINUE
C     SORT VARIABLE NAMES INTO ALPHABETIC ORDER
      CALL SORT(IVV,N,7,0)
C     RELOAD IV FROM IV1
      DO 720 I=1,N
      DO 730 J=1,7
      IV(I,J)=IV1(J,I)
  730 CONTINUE
  720 CONTINUE
C     WRITE DATA STATEMENTS FOR ORDERED VARIABLES
      DO 151 I=1,N
  151 WRITE(15,150)I,(IV(I,J),J=1,7)
  150 FORMAT(6X,'DATA(IVARG(',I3,',K),K=1,7)/6H',A6,2('',',I3),
     & ',',I2,',',I5,        ',',I2,',',I5,'/')
      STOP
      END
      SUBROUTINE IGF(NAME,ITERM,IFCN)
C     SUBROUTINE IGF EXTRACTS VARIABLE NAMES AND DIMENSIONS FROM
C     THE COMMON BLOCK AND OPERATORS AND VARIABLE NAMES FROM THE
C     EXCEPTION STATEMENTS
      CHARACTER IFM,IFMT
      DIMENSION IRA(57),ISE(7),IFMT(5)
      DATA MB/6H      /
      DATA IGC,MAST,MOLK,MCMN,ALP,MRP,MEND,MCOM,(IFMT(J),J=1,5)/57,
     &39,16,64COMMON,29,45,3HEND,59,4H(I1,,4H(I2),4H(I3),,4H(I4),4H(I5)/
      GO TO (1,2),IFCN
```

```
11400      10) IDENTIFY SIX LETTER VARIABLE NAME OR OPERATOR
1150     1 NOC=0
1160    11 ICC=ICC+1
1170       IF(ICC.LE.67) GOTO 12
11800      READ A NEW LINE OF INPUT
1190       CALL RD(IRA)
1200    21 FORMAT(67R1)
1210       ICC=2
12200      TEST NEXT CHARACTER
1230    12 K=IRA(ICC)
1240       IF(K.EQ.MBLK) GOTO 11
1250       IF(K.EQ.MCOM) GOTO 13
12600      KEEP TRACK OF WORD LENGTH
1270    14 NOC=NOC+1
1280       IST(NOC)=K
1290       IF(NOC.LT.7) GOTO 13
1300       NOC=6
1310       GOTO 15
1320    13 ICC=ICC+1
1330       IF(ICC.LE.67) GOTO 16
13400      READ A NEW LINE. IF IT IS NOT A CONTINUATION, VARIABLE NAME
13500      ENDED ON LAST LINE
1360       CALL RD(IRA)
1370       ICC=1
1380       IF (IRA(1).EQ.MBLK) GOTO 15
1390       ICC=2
14000      TEST NEXT CHARACTER
1410    15 K=IRA(ICC)
1420       IF(K.EQ.MBLK) GOTO 13
1430       IF(K.EQ.MLP) GOTO 15
1440       IF(K.EQ.MCOM) GOTO 15
1450       GOTO 14
14600      RETURN EXTRACTED INFORMATION UNLESS IT IS "COMMON"
1470    15 NAME=MB
1480       ENCODE(NAME,20) (IST(J),J=1,NOC)
1490       ITERM=K
1500       IF(NAME.NE.MCMN) RETURN
1510       IST(1)=K
1520       NOC=1
1530       GOTO 11
15400      20) PROCESS DIMENSIONS
1550     2 NOC=0
1560    21 ICC=ICC+1
1570       IF(ICC.LE.67) GOTO 22
15800      READ A NEW LINE OF INPUT
1590       CALL RD(IRA)
1600       ICC=2
16100      TEST NEXT CHARACTER
1620    22 K=IRA(ICC)
1630       IF(K.EQ.MBLK) GOTO 21
1640       IF(K.EQ.MCOM.OR.K.EQ.MRP) GOTO 23
16500      RECORD NUMBER OF INDEX ARGUMENTS
1660       NOC=NOC+1
1670       IST(NOC)=K
1680       GOTO 21
```

```
C     RETURN VALUE OF A DIMENSION
   23 ITERM=K
      ENCODE(I,20) (IST(J),J=1,NOC)
      IFM=IFMT(NOC)
      DECODE(I,IFM) NAME
      RETURN
      END
      SUBROUTINE RD(IRA)
C     SUBROUTINE RD READS THE NEXT LINE OF INPUT DATA TO PROGRAM COMM MAIN
C     REQUESTED BY SUBROUTINE IGF
      DIMENSION IRA(67)
      DATA IU,NUM/1*,0/
C     READ A LINE OF DATA
      NOT=6
    1 READ(IU,30,END=12) IC1,IRA
   30 FORMAT(A1,4X,67R1)
C     KEEP TRACK OF NUMBER OF LINES OF DATA PROCESSED
      NUM=NUM+1
      IF(NUM.GE.1000) STOP
      WRITE(NOT,40) NUM,IRA
   40 FORMAT(I4,67R1)
      GOTO 3
   12 IF(IU.NE.25) GOTO 13
      WRITE(06,50)
   50 FORMAT(1X,"PREMATURE EOF ON FILE 25. PROGRAM TERMINATED.")
      STOP
C     IF EOF ENCOUNTERED ON FILE 10 START READING FROM FILE 25.
   13 IU=25
      GOTO 1
C     IF THE LINE OF DATA IS NOT A COMMENT, RETURN INFORMATION TO IGF
    3 IF(IC1.NE.1H ) GOTO 1
      RETURN
      END
```

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ground-air warfare, nuclear warfare, chemical warfare, theater-level model, military operations research, defense planning, ground forces, tactical air forces

20. ABSTRACT (continue on reverse side if necessary and identify by block number) The Institute for Defense Analyses Tactical Warfare (TACWAR) model is a fully-automated combat simulation that can be used to assess the interaction of combat forces employing conventional, nuclear, and chemical weapons in a theater-wide campaign. This document presents the information necessary for programmer personnel to maintain the TACWAR model.

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